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(54) Title: COMPOSITIONS, KITS, AND METHODS FOR IDENTIFICATION, ASSESSMENT, PREVENTION, AND THERAPY OF BREAST CANCER

(57) Abstract: The invention relates to compositions, kits and methods for detecting, characterizing, preventing, and treating human breast cancers. A variety of markers are provided, wherein changes in the levels of expression of one or more of the markers is correlated with the presence of breast cancer.

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COMPOSITIONS, KITS, AND METHODS FOR
IDENTIFICATION, ASSESSMENT, PREVENTION,
AND THERAPY OF BREAST CANCER

5 RELATED APPLICATIONS

The present application claims priority to U.S. provisional application serial no. 60/171,406, filed on December 21, 1999, U.S. provisional application serial no. 60/176,423, filed on January 14, 2000, U.S. provisional application serial no. 60/190,471, filed on March 17, 2000, U.S. provisional application serial no. 60/193,482, 10 filed on March 29, 2000, U.S. provisional application serial no. 60/205,231, filed on May 15, 2000, U.S. provisional application serial no. 60/213,236, filed on June 20, 2000, U.S. provisional application serial no. 60/219,865, filed on July 20, 2000, all of which are expressly incorporated by reference.

15 FIELD OF THE INVENTION

The field of the invention is breast cancer, including diagnosis, characterization, management, and therapy of breast cancer.

BACKGROUND OF THE INVENTION

20 The increased number of cancer cases reported in the United States, and, indeed, around the world, is a major concern. Currently there are only a handful of treatments available for specific types of cancer, and these provide no absolute guarantee of success. In order to be most effective, these treatments require not only an early detection of the malignancy, but a reliable assessment of the severity of the 25 malignancy.

The incidence of breast cancer, a leading cause of death in women, has been gradually increasing in the United States over the last thirty years. In 1997, it was estimated that 181,000 new cases were reported in the U.S., and that 44,000 people would die of breast cancer (Parker *et al.*, 1997, *CA Cancer J. Clin.* 47:5-27; Chu *et al.*, 30 1996, *J. Nat. Cancer Inst.* 88:1571-1579). While the pathogenesis of breast cancer is unclear, transformation of normal breast epithelium to a malignant phenotype may be the result of genetic factors, especially in women under 30 (Miki *et al.*, 1994, *Science*,

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266:66-71). The discovery and characterization of *BRCA1* and *BRCA2* has recently expanded our knowledge of genetic factors which can contribute to familial breast cancer. Germ-line mutations within these two loci are associated with a 50 to 85% lifetime risk of breast and/or ovarian cancer (Casey, 1997, *Curr. Opin. Oncol.* 9:88-93; 5 Marcus *et al.*, 1996, *Cancer* 77:697-709). However, it is likely that other, non-genetic factors also have a significant effect on the etiology of the disease. Regardless of its origin, breast cancer morbidity and mortality increases significantly if it is not detected early in its progression. Thus, considerable effort has focused on the early detection of cellular transformation and tumor formation in breast tissue.

10 Currently, the principal manner of identifying breast cancer is through detection of the presence of dense tumorous tissue. This may be accomplished to varying degrees of effectiveness by direct examination of the outside of the breast, or through mammography or other X-ray imaging methods (Jatoi, 1999, *Am. J. Surg.* 177:518-524). The latter approach is not without considerable cost, however. Every time a

15 mammogram is taken, the patient incurs a small risk of having a breast tumor induced by the ionizing properties of the radiation used during the test. In addition, the process is expensive and the subjective interpretations of a technician can lead to imprecision, *e.g.*, one study showed major clinical disagreements for about one-third of a set of mammograms that were interpreted individually by a surveyed group of radiologists.

20 Moreover, many women find that undergoing a mammogram is a painful experience. Accordingly, the National Cancer Institute has not recommended mammograms for women under fifty years of age, since this group is not as likely to develop breast cancers as are older women. It is compelling to note, however, that while only about 22% of breast cancers occur in women under fifty, data suggests that breast cancer is

25 more aggressive in pre-menopausal women.

It would therefore be beneficial to provide specific methods and reagents for the diagnosis, staging, prognosis, monitoring, and treatment of diseases associated with breast cancer, or to indicate a predisposition to such for preventative measures.

30

SUMMARY OF THE INVENTION

The invention relates to a method of assessing whether a patient is afflicted with breast cancer. This method comprises the step of comparing the level of expression of a

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marker in a patient sample, wherein the marker is listed in Tables 1-21 and the normal level of expression of the marker in a control, *e.g.*, a sample from a patient without breast cancer. A significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with

5 breast cancer. In a preferred embodiment, the marker is listed in Tables 2-5 and 8-9.

Preferably, a protein corresponding to the marker is a secreted protein or is predicted to correspond to a secreted protein (see, *e.g.* Tables 6 and 7). Alternatively, the marker can correspond to a protein having an extracellular portion, to one which is normally expressed in breast tissue at a detectable level, or both.

10 In one method, the marker(s) are preferably selected such that the positive predictive value of the method is at least about 10%. Also preferred are embodiments of the method wherein the marker is over- or under-expressed by at least two-fold in at least about 20% of stage 0 breast cancer patients, stage I breast cancer patients, stage IIA breast cancer patients, stage IIB breast cancer patients, stage IIIA breast cancer patients,
15 stage IIIB breast cancer patients, stage IV breast cancer patients, grade I breast cancer patients, grade II breast cancer patients, grade III breast cancer patients, malignant breast cancer patients, ductal carcinoma breast cancer patients, and lobular carcinoma breast cancer patients.

In one embodiment of the methods of the present invention, the patient sample is
20 a breast tissue-associated body fluid. Such fluids include, for example, blood fluids, lymph and cystic fluids, as well as nipple aspirates. In another embodiment, the sample comprises cells obtained from the patient. In another embodiment, the patient sample is *in vivo*.

In accordance with the methods of the present invention, the level of expression
25 of the marker in a sample can be assessed, for example, by detecting the presence in the sample of:

- a protein corresponding to the marker or a fragment of the protein (*e.g.* using a reagent, such as an antibody, an antibody derivative, or an antibody fragment, which binds specifically with the protein or fragment)
- 30 ◦ a metabolite which is produced directly (*i.e.*, catalyzed) or indirectly by a protein corresponding to the marker

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- 5 ◦ a transcribed polynucleotide (*e.g.* an mRNA or a cDNA), or fragment thereof, having at least a portion with which the marker is substantially homologous (*e.g.* by contacting a mixture of transcribed polynucleotides obtained from the sample with a substrate having one or more of the markers listed in Table 1-21 fixed thereto at selected positions)
- a transcribed polynucleotide or fragment thereof, wherein the polynucleotide anneals with the marker under stringent hybridization conditions.

10 The methods of the present invention are particularly useful for patients with an identified breast mass or symptoms associated with breast cancer. The methods of the present invention can also be of particular use with patients having an enhanced risk of developing breast cancer (*e.g.*, patients having a familial history of breast cancer, patients identified as having a mutant oncogene, and patients at least about 50 years of age). The methods of the present invention may further be of particular use in

15 monitoring the efficacy of treatment of a breast cancer patient (*e.g.* the efficacy of chemotherapy).

 The methods of the present invention may be performed using a plurality (*e.g.* 2, 3, 5, or 10 or more) of markers. According to a method involving a plurality of markers, the level of expression in the sample of each of a plurality of markers independently

20 selected from the markers listed in Tables 1-21 is compared with the normal level of expression of each of the plurality of markers in samples of the same type obtained from control humans not afflicted with breast cancer. A significantly altered level of expression of one or more of the markers listed in Tables 1-21 in the sample, relative to the corresponding normal levels, is an indication that the patient is afflicted with breast

25 cancer. The markers of Tables 1-21 may also be used in combination with known breast cancer markers in the methods of the present invention.

 In a preferred method of assessing whether a patient is afflicted with breast cancer (*e.g.*, new detection ("screening"), detection of recurrence, reflex testing), the method comprises comparing:

30 a) the level of expression of a marker in a patient sample, wherein at least one marker is selected from the markers of Tables 1-21, and

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b) the normal level of expression of the marker in a control non-breast cancer sample.

A significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with breast
5 cancer.

The methods of the present invention further include a method of assessing the efficacy of a test compound for inhibiting breast cancer in a patient. This method comprises comparing:

- 10 a) expression of a marker in a first sample obtained from the patient and maintained in the presence of the test compound, wherein the marker is selected from the group consisting of the markers listed Tables 1-21, and
 b) expression of the marker in a second sample obtained from the patient and maintained in the absence of the test compound.

A significantly altered level of expression of the marker in the first sample, relative to
15 the second sample, is an indication that the test compound is efficacious for inhibiting breast cancer in the patient. For example, the first and second samples can be portions of a single sample obtained from the patient or portions of pooled samples obtained from the patient.

The invention further relates to a method of assessing the efficacy of a therapy
20 for inhibiting breast cancer in a patient. This method comprises comparing:

- a) expression of a marker in a first sample obtained from the patient prior to providing at least a portion of the therapy to the patient, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21, and
25 b) expression of the marker in a second sample obtained from the patient following provision of the portion of the therapy.

A significantly altered level of expression of the marker in the second sample, relative to the first sample, is an indication that the therapy is efficacious for inhibiting breast cancer in the patient.

30 It will be appreciated that in these methods the "therapy" may be any therapy for treating breast cancer including, but not limited to, chemotherapy, radiation therapy and surgical removal of tissue, *e.g.*, a breast tumor. Thus, the methods of the invention may

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be used to evaluate a patient before, during and after therapy, for example, to evaluate the reduction in tumor burden.

The present invention therefore further comprises a method for monitoring the progression of breast cancer in a patient, the method comprising:

- 5 a) detecting in a patient sample at a first time point, the expression of a marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21;
- b) repeating step a) at a subsequent time point; and
- c) comparing the level of expression detected in steps a) and b), and therefrom
- 10 monitoring the progression of breast cancer in the patient.

The invention also includes a method of selecting a composition for inhibiting breast cancer in a patient. This method comprises the steps of:

- a) obtaining a sample comprising cancer cells from the patient;
- b) separately maintaining aliquots of the sample in the presence of a
- 15 plurality of test compositions;
- c) comparing expression of a marker listed in Tables 1-21 in each of the aliquots; and
- d) selecting one of the test compositions which alters a lower level of expression of the marker in the aliquot containing that test composition,
- 20 relative to other test compositions.

In addition, the invention includes a method of inhibiting breast cancer in a patient. This method comprises the steps of:

- a) obtaining a sample comprising cancer cells from the patient;
- b) separately maintaining aliquots of the sample in the presence of a
- 25 plurality of test compositions;
- c) comparing expression of a marker listed in Tables 1-21 in each of the aliquots; and
- d) administering to the patient at least one of the test compositions which induces an altered level of expression of the marker in the aliquot
- 30 containing that test composition, relative to other test compositions.

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The invention also includes a kit for assessing whether a patient is afflicted with breast cancer. This kit comprises reagents for assessing expression of a marker listed in Tables 1-21.

5 In another aspect, the invention relates to a kit for assessing the suitability of each of a plurality of compounds for inhibiting breast cancer in a patient. The kit comprises a reagent for assessing expression of a marker listed in Tables 1-21, and may also comprise a plurality of compounds.

10 In another aspect, the invention relates to a kit for assessing the presence of breast cancer cells. This kit comprises an antibody, wherein the antibody binds specifically with a protein corresponding to a marker listed in Tables 1-21. The kit may also comprise a plurality of antibodies, wherein the plurality binds specifically with a protein corresponding to a different marker which is also listed in Tables 1-21.

15 The invention also includes a kit for assessing the presence of breast cancer cells, wherein the kit comprises a nucleic acid probe. The probe binds specifically with a transcribed polynucleotide corresponding to a marker listed in Tables 1-21. The kit may also comprise a plurality of probes, wherein each of the probes binds specifically with a transcribed polynucleotide corresponding to a different marker listed in Tables 1-21.

20 The invention further relates to a method of making an isolated hybridoma which produces an antibody useful for assessing whether a patient is afflicted with breast cancer. The method comprises isolating a protein or protein fragment corresponding to a marker listed in Tables 1-21, immunizing a mammal using the isolated protein or protein fragment, isolating splenocytes from the immunized mammal, fusing the isolated splenocytes with an immortalized cell line to form hybridomas, and screening individual hybridomas for production of an antibody which specifically binds with the protein or
25 protein fragment to isolate the hybridoma. The invention also includes an antibody produced by this method.

The invention further includes a method of assessing the breast carcinogenic or irregular growth promoting potential of a test compound. This method comprises the steps of:

- 30 a) maintaining separate aliquots of breast cells in the presence and absence of the test compound; and
b) comparing expression of a marker in each of the aliquots.

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The marker is selected from those listed in Tables 1-21. A significantly altered level of expression of the marker in the aliquot maintained in the presence of (or exposed to) the test compound, relative to the aliquot maintained in the absence of the test compound, is an indication that the test compound possesses breast carcinogenic or irregular growth promoting potential.

Additionally, the invention includes a kit for assessing the breast carcinogenic potential of a test compound. The kit comprises breast cells and a reagent for assessing expression of a marker in each of the aliquots. The marker is selected from those listed in Tables 1-21.

The invention further includes a method of treating a patient afflicted with breast cancer, comprising providing to cells of the patient an antisense oligonucleotide complementary to a polynucleotide corresponding to a marker listed in Tables 1-21.

The invention includes a method of inhibiting breast cancer in a patient at risk for developing breast cancer. This method comprises inhibiting or increasing expression or overexpression of a gene corresponding to a marker listed in Tables 1-21 (depending on whether the gene is over-expressed or under-expressed in breast cancer cells).

It will be appreciated that the methods and kits of the present invention may also include known cancer markers including known breast cancer markers. It will further be appreciated that the methods and kits may be used to identify cancers other than breast cancer.

DETAILED DESCRIPTION OF THE INVENTION

The invention relates to newly discovered correlation between expression of certain markers and the cancerous state of breast cells. It has been discovered that the level of expression of individual markers and combinations of markers described herein correlates with the presence of breast cancer in a patient. Methods are provided for detecting the presence of breast cancer in a sample, the absence of breast cancer in a sample, the stage of breast cancer, and other characteristics of breast cancer that are relevant to prevention, diagnosis, characterization, and therapy of breast cancer in a patient.

Definitions

As used herein, each of the following terms has the meaning associated with it in this section.

The articles "a" and "an" are used herein to refer to one or to more than one (*i.e.* to at least one) of the grammatical object of the article. By way of example, "an element" means one element or more than one element.

A "marker" is a naturally-occurring polymer corresponding to at least one of the nucleic acids listed in Tables 1-21. For example, markers include, without limitation, sense and anti-sense strands of genomic DNA (*i.e.* including any introns occurring therein), RNA generated by transcription of genomic DNA (*i.e.* prior to splicing), RNA generated by splicing of RNA transcribed from genomic DNA, and proteins generated by translation of spliced RNA (*e.g.* including proteins both before and after cleavage of normally cleaved regions such as transmembrane signal sequences). As used herein, "marker" may also include a cDNA made by reverse transcription of an RNA generated by transcription of genomic DNA (including spliced RNA).

As used herein a "polynucleotide corresponds to" another (a first) polynucleotide if it is related to the first polynucleotide by any of the following relationships: 1) The second polynucleotide comprises the first polynucleotide and the second polynucleotide encodes a gene product. 2) The second polynucleotide is 5' or 3' to the first polynucleotide in cDNA, RNA, genomic DNA, or fragment of any of these polynucleotides. For example, a second polynucleotide may be fragment of a gene that includes the first and second polynucleotides. The first and second polynucleotides are related in that they are components of the gene coding for a gene product, such as a protein or antibody. However, it is not necessary that the second polynucleotide comprises or overlaps with the first polynucleotide to be encompassed within the definition of "corresponding to" as used herein. For example, the first polynucleotide may be a fragment of a 3' untranslated region of the second polynucleotide. The first and second polynucleotide may be fragments of a gene coding for a gene product. The second polynucleotide may be an exon of the gene while the first polynucleotide may be an intron of the gene. 3) The second polynucleotide is the complement of the first polynucleotide.

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The term "probe" refers to any molecule which is capable of selectively binding to a specifically intended target molecule, for example a marker of the invention.

Probes can be either synthesized by one skilled in the art, or derived from appropriate biological preparations. For purposes of detection of the target molecule, probes may be specifically designed to be labeled, as described herein. Examples of molecules that can be utilized as probes include, but are not limited to, RNA, DNA, proteins, antibodies, and organic monomers.

A "breast-associated" body fluid is a fluid which, when in the body of a patient, contacts or passes through breast cells or into which cells, nucleic acids or proteins shed from breast cells are capable of passing. Exemplary breast-associated body fluids include blood fluids, lymph, cystic fluid, urine and nipple aspirates.

The "normal" level of expression of a marker is the level of expression of the marker in breast cells of a patient, *e.g.* a human, not afflicted with breast cancer.

"Over-expression" and "under-expression" of a marker refer to expression of the marker of a patient at a greater or lesser level, respectively, than normal level of expression of the marker (*e.g.* at least two-fold greater or lesser level).

As used herein, the term "promoter/regulatory sequence" means a nucleic acid sequence which is required for expression of a gene product operably linked to the promoter/regulatory sequence. In some instances, this sequence may be the core promoter sequence and in other instances, this sequence may also include an enhancer sequence and other regulatory elements which are required for expression of the gene product. The promoter/regulatory sequence may, for example, be one which expresses the gene product in a tissue-specific manner.

A "constitutive" promoter is a nucleotide sequence which, when operably linked with a polynucleotide which encodes or specifies a gene product, causes the gene product to be produced in a living human cell under most or all physiological conditions of the cell.

An "inducible" promoter is a nucleotide sequence which, when operably linked with a polynucleotide which encodes or specifies a gene product, causes the gene product to be produced in a living human cell substantially only when an inducer which corresponds to the promoter is present in the cell.

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A "tissue-specific" promoter is a nucleotide sequence which, when operably linked with a polynucleotide which encodes or specifies a gene product, causes the gene product to be produced in a living human cell substantially only if the cell is a cell of the tissue type corresponding to the promoter.

5 A "transcribed polynucleotide" is a polynucleotide (*e.g.* an RNA, a cDNA, or an analog of one of an RNA or cDNA) which is complementary to or homologous with all or a portion of a mature RNA made by transcription of a genomic DNA corresponding to a marker of the invention and normal post-transcriptional processing (*e.g.* splicing), if any, of the transcript.

10 "Complementary" refers to the broad concept of sequence complementarity between regions of two nucleic acid strands or between two regions of the same nucleic acid strand. It is known that an adenine residue of a first nucleic acid region is capable of forming specific hydrogen bonds ("base pairing") with a residue of a second nucleic acid region which is antiparallel to the first region if the residue is thymine or uracil.

15 Similarly, it is known that a cytosine residue of a first nucleic acid strand is capable of base pairing with a residue of a second nucleic acid strand which is antiparallel to the first strand if the residue is guanine. A first region of a nucleic acid is complementary to a second region of the same or a different nucleic acid if, when the two regions are arranged in an antiparallel fashion, at least one nucleotide residue of the first region is

20 capable of base pairing with a residue of the second region. Preferably, the first region comprises a first portion and the second region comprises a second portion, whereby, when the first and second portions are arranged in an antiparallel fashion, at least about 50%, and preferably at least about 75%, at least about 90%, or at least about 95% of the nucleotide residues of the first portion are capable of base pairing with nucleotide

25 residues in the second portion. More preferably, all nucleotide residues of the first portion are capable of base pairing with nucleotide residues in the second portion.

"Homologous" as used herein, refers to nucleotide sequence similarity between two regions of the same nucleic acid strand or between regions of two different nucleic acid strands. When a nucleotide residue position in both regions is occupied by the

30 same nucleotide residue, then the regions are homologous at that position. A first region is homologous to a second region if at least one nucleotide residue position of each region is occupied by the same residue. Homology between two regions is expressed in

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terms of the proportion of nucleotide residue positions of the two regions that are occupied by the same nucleotide residue. By way of example, a region having the nucleotide sequence 5'-ATTGCC-3' and a region having the nucleotide sequence 5'-TATGGC-3' share 50% homology. Preferably, the first region comprises a first portion and the second region comprises a second portion, whereby, at least about 50%, and preferably at least about 75%, at least about 90%, or at least about 95% of the nucleotide residue positions of each of the portions are occupied by the same nucleotide residue. More preferably, all nucleotide residue positions of each of the portions are occupied by the same nucleotide residue.

10 A marker is "fixed" to a substrate if it is covalently or non-covalently associated with the substrate such the substrate can be rinsed with a fluid (*e.g.* standard saline citrate, pH 7.4) without a substantial fraction of the marker dissociating from the substrate.

As used herein, a "naturally-occurring" nucleic acid molecule refers to an RNA
15 or DNA molecule having a nucleotide sequence that occurs in nature (*e.g.* encodes a natural protein).

Expression of a marker in a patient is "significantly" higher or lower than the normal level of expression of a marker if the level of expression of the marker is greater or less, respectively, than the normal level by an amount greater than the standard error
20 of the assay employed to assess expression, and preferably at least twice, and more preferably three, four, five or ten times that amount. Alternately, expression of the marker in the patient can be considered "significantly" higher or lower than the normal level of expression if the level of expression is at least about two, and preferably at least about three, four, or five times, higher or lower, respectively, than the normal level of
25 expression of the marker.

Breast cancer is "inhibited" if at least one symptom of the cancer is alleviated, terminated, slowed, or prevented. As used herein, breast cancer is also "inhibited" if recurrence or metastasis of the cancer is reduced, slowed, delayed, or prevented.

A kit is any manufacture (*e.g.* a package or container) comprising at least one
30 reagent, *e.g.* a probe, for specifically detecting a marker of the invention, the manufacture being promoted, distributed, or sold as a unit for performing the methods of the present invention.

Description

The present invention is based, in part, on identification of markers which are expressed at a different level in breast cancer cells than they are in normal (*i.e.* non-cancerous) breast cells. The markers of the invention correspond to DNA, RNA, and polypeptide molecules which can be detected in one or both of normal and cancerous breast cells. The presence, absence, or level of expression of one or more of these markers in breast cells is herein correlated with the cancerous state of the tissue. The invention thus includes compositions, kits, and methods for assessing the cancerous state of breast cells (*e.g.* cells obtained from a human, cultured human cells, archived or preserved human cells and *in vivo* cells).

The compositions, kits, and methods of the invention have the following uses, among others:

- 1) assessing whether a patient is afflicted with breast cancer;
- 2) assessing the stage of breast cancer in a human patient;
- 3) assessing the grade of breast cancer in a patient;
- 4) assessing the benign or malignant nature of breast cancer in a patient;
- 5) assessing the histological type of neoplasm (*e.g.* ductal, lobular, etc.) associated with breast cancer in a patient;
- 6) making an isolated hybridoma which produces an antibody useful for assessing whether a patient is afflicted with breast cancer;
- 7) assessing the presence of breast cancer cells;
- 8) assessing the efficacy of one or more test compounds for inhibiting breast cancer in a patient;
- 9) assessing the efficacy of a therapy for inhibiting breast cancer in a patient;
- 10) monitoring the progression of breast cancer in a patient;
- 11) selecting a composition or therapy for inhibiting breast cancer in a patient;
- 12) treating a patient afflicted with breast cancer;
- 13) inhibiting breast cancer in a patient;
- 14) assessing the carcinogenic potential of a test compound; and

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- 15) inhibiting breast cancer in a patient at risk for developing breast cancer.

The invention thus includes a method of assessing whether a patient is afflicted with breast cancer. This method comprises comparing the level of expression of a marker in a patient sample and the normal level of expression of the marker in a control, *e.g.*, a non-breast cancer sample. A significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with breast cancer. The marker is selected from the group consisting of the markers listed in Tables 1-21, which are differentially expressed in breast cancer cells. Although one or more molecules corresponding to the markers listed in Tables 1-21 may have been described by others, the significance of the level of expression of these markers with regard to the cancerous state of breast cells has not previously been recognized.

The invention also encompasses polynucleotides which differ from that of the polynucleotides described above, but which produce the same phenotypic effect, *e.g.* allelic variants. These altered, but phenotypically equivalent polynucleotides are referred to "equivalent nucleic acids." This invention also encompasses polynucleotides characterized by changes in non-coding regions that do not alter the polypeptide produced therefrom when compared to the polynucleotide herein. This invention further encompasses polynucleotides, which hybridize to the polynucleotides of the subject invention under conditions of moderate or high stringency. Alternatively, the polynucleotides are at least 85%, or at least 90%, or more preferably, greater or equal to 95% identical as determined by a sequence alignment program when run under default parameters.

Table 1 lists markers, expression of which was increased by at least five-fold in at least:

- (a) one of eleven breast cancer cell cultures tested, relative to its expression in six normal (*i.e.* non-cancerous) human epithelial mammary cell lines (HMEC); or
- (b) one of fifteen different breast cancer tissue samples relative to expression in seven normal breast tissue samples.

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- (c) The fifteen cancer tissue samples include: (i) five invasive lobular carcinomas (ILC), (ii) five invasive ductal carcinomas (IDC), and (iii) five ductal carcinoma *in situ* (DCIS) .

5 Table 2 lists markers, expression of which was increased by at least 5-fold in at least 3 of the 11 breast cancer cell cultures relative to its expression in normal (i.e. non-cancerous) mammary epithelial cell lines.

Table 3 lists markers, expression of which was increased by at least 2-fold in at least 3 of the 5 ILC breast cancer tissue samples relative to its expression in seven non-cancerous breast tissue samples.

10 Table 4 lists markers, expression of which was increased by at least 2-fold in at least 3 of the 5 IDC breast cancer tissue samples relative to its expression in seven non-cancerous breast tissue samples.

Table 5 lists markers, expression of which was increased by at least 2-fold in at least 3 of the 5 DCIS breast cancer tissue samples relative to its expression in seven non-cancerous breast tissue samples.

15 Table 6 lists a set of markers, expression of which was

- (a) increased by at least 10-fold in at least 1 of the 11 breast cancer cell cultures and which are predicted or known to code for products that are secreted based upon protein profiling analysis, sequence analysis and/or literature references, or
- 20 (b) expression of which was increased at least 5-fold in 1 of the 15 breast cancer tissue samples and which are predicted or known to code for products that are secreted based upon protein profiling analysis, sequence analysis and/or literature references.

25 Table 7 lists a set of preferred markers, expression of which was increased by at least 4.5 fold at least one of each of the three types of breast cancer tissue samples used (ILC, IDC, and DCIS), and which are predicted or known to code for products that are secreted based upon proteomic studies, sequence analysis and/or literature references.

30 Table 8 lists markers (SEQ ID NOS 1-6540) identified through subtracted library experiments described herein. The library source for SEQ ID NOS: 1-1773 was breast cancer cell cultures (ascites and pleural fluid cultures) versus HMEC. The library

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source for SEQ ID NOS: 1774-3012 was breast cancer tissue (ILC) versus breast normal tissue. The library source for SEQ ID NOS: 3013-4982 was breast cancer tissue (IDC) versus breast normal tissue. The library source for SEQ ID NOS: 4983-6540 was breast cancer tissue (DCIS) versus breast normal tissue.

5 Markers of the present invention were also identified from cells obtained from breast cancer tissues exhibiting varying clinical outcomes and degrees of aggressiveness. Table 9 lists the markers that were identified by subtractive library experiments. Table 9-1 is a key for the sequences of Table 9 which indicates in which databases the sequences of Table 9 were identified. Tables 10-17 lists the markers that were identified
10 through transcriptional profiling experiments.

Table 18 and Table 19 list markers which were identified based on a correlation between the transcription profiles of the markers and the transcription profiles of one or more of 29 previously known markers in cancer cell lines or tumors. These 29 known cancer markers represent markers which are indicative of cancer in general and/or breast
15 cancer in particular.

The markers listed in Table 18 have a correlation coefficient which is greater than 0.8 or less than -0.8 and the markers listed in Table 19 have a correlation coefficient of at least 0.64. The correlation coefficients were determined by comparing the transcription profiles (expression patterns) of the known cancer markers in the
20 cancer cell lines to the transcription profiles (expression patterns) of the marker genes in the cancer cell lines. The greater the correlation coefficient's magnitude (positive or negative), the stronger the likelihood that the two markers (e.g., the marker of the present invention and the known cancer marker) are similarly regulated (e.g., in the same metabolic or signaling pathways, or located on the same region of a chromosome).
25 Therefore, based on the correlation coefficients, it is predicted that the markers listed in Table 18 and Table 19 and the known cancer markers are similarly regulated.

Table 20 correlates IMAGE clone ID numbers from the tables of the present invention with corresponding GenBank accession numbers. Table 21 correlates the GenBank accession numbers with GenBank GI numbers.

30 Any marker or combination of markers listed in Tables 1-21, as well as any known markers in combination with the markers set forth in Tables 1-21, may be used in the compositions, kits, and methods of the present invention. Use of markers listed in

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Tables 2-5 and 8-9 are preferred, as well as the use of the markers listed in Tables 6 and 7. In general, it is preferable to use markers for which the difference between the level of expression of the marker in breast cancer cells and the level of expression of the same marker in normal breast cells is as great as possible. Although this difference can be as small as the limit of detection of the method for assessing expression of the marker, it is preferred that the difference be at least greater than the standard error of the assessment method, and preferably a difference of at least 2-, 3-, 4-, 5-, 6-, 7-, 8-, 9-, 10-, 15-, 20-, 25-, 100-, 500-, 1000-fold or greater.

It is recognized that certain markers correspond to proteins which are secreted from breast cells (*i.e.* one or both of normal and cancerous cells) to the extracellular space surrounding the cells (see, e.g. Tables 6 and 7). These markers are preferably used in certain embodiments of the compositions, kits, and methods of the invention, owing to the fact that the protein corresponding to each of these markers can be detected in a breast-associated body fluid sample, which may be more easily collected from a human patient than a tissue biopsy sample. In addition, preferred *in vivo* techniques for detection of a protein corresponding to a marker of the invention include introducing into a subject a labeled antibody directed against the protein. For example, the antibody can be labeled with a radioactive marker whose presence and location in a subject can be detected by standard imaging techniques.

Although not every marker corresponding to a secreted protein is indicated as such in the Tables herein, it is a simple matter for the skilled artisan to determine whether any particular marker corresponds to a secreted protein. In order to make this determination, the protein corresponding to a marker is expressed in a test cell (*e.g.* a cell of a breast cell line), extracellular fluid is collected, and the presence or absence of the protein in the extracellular fluid is assessed (*e.g.* using a labeled antibody which binds specifically with the protein).

The following is an example of a method which can be used to detect secretion of a protein corresponding to a marker of the invention. About 8×10^5 293T cells are incubated at 37°C in wells containing growth medium (Dulbecco's modified Eagle's medium {DMEM} supplemented with 10% fetal bovine serum) under a 5% (v/v) CO₂, 95% air atmosphere to about 60-70% confluence. The cells are then transfected using a standard transfection mixture comprising 2 micrograms of DNA comprising an

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expression vector encoding the protein and 10 microliters of LipofectAMINE™ (GIBCO/BRL Catalog no. 18342-012) per well. The transfection mixture is maintained for about 5 hours, and then replaced with fresh growth medium and maintained in an air atmosphere. Each well is gently rinsed twice with DMEM which does not contain methionine or cysteine (DMEM-MC; ICN Catalog no. 16-424- 54). About 1 milliliter of DMEM-MC and about 50 microcuries of Trans-³⁵S™ reagent (ICN Catalog no. 51006) are added to each well. The wells are maintained under the 5% CO₂ atmosphere described above and incubated at 37°C for a selected period. Following incubation, 150 microliters of conditioned medium is removed and centrifuged to remove floating cells and debris. The presence of the protein in the supernatant is an indication that the protein is secreted.

Examples of breast-associated body fluids include blood fluids (*e.g.* whole blood, blood serum, blood having platelets removed therefrom, etc.), lymph, ascitic fluid, cystic fluid, urine and nipple aspirates. In these embodiments, the level of expression of the marker can be assessed by assessing the amount (*e.g.* absolute amount or concentration) of the marker in a breast-associated body fluid obtained from a patient. The fluid can, of course, be subjected to a variety of well-known post-collection preparative and storage techniques (*e.g.* storage, freezing, ultrafiltration, concentration, evaporation, centrifugation, etc.) prior to assessing the amount of the marker in the fluid.

Many breast-associated body fluids (*i.e.* usually excluding urine) can have breast cells therein, particularly when the breast cells are cancerous, and, more particularly, when the breast cancer is metastasizing. Thus, the compositions, kits, and methods of the invention can be used to detect expression of markers corresponding to proteins having at least one portion which is displayed on the surface of cells which express it. Although not every protein having at least one cell-surface portion is indicated in the Tables, it is a simple matter for the skilled artisan to determine whether the protein corresponding to any particular marker comprises a cell-surface protein. For example, immunological methods may be used to detect such proteins on whole cells, or well known computer-based sequence analysis methods (*e.g.* the SIGNALP program; Nielsen *et al.*, 1997, *Protein Engineering* 10:1-6) may be used to predict the presence of at least one extracellular domain (*i.e.* including both secreted proteins and proteins having at least one cell-surface domain). Expression of a marker corresponding to a protein

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having at least one portion which is displayed on the surface of a cell which expresses it may be detected without necessarily lysing the cell (*e.g.* using a labeled antibody which binds specifically with a cell-surface domain of the protein).

Expression of a marker of the invention may be assessed by any of a wide
5 variety of well known methods for detecting expression of a transcribed molecule or protein. Non-limiting examples of such methods include immunological methods for detection of secreted, cell-surface, cytoplasmic, or nuclear proteins, protein purification methods, protein function or activity assays, nucleic acid hybridization methods, nucleic acid reverse transcription methods, and nucleic acid amplification methods.

10 In a preferred embodiment, expression of a marker is assessed using an antibody (*e.g.* a radio-labeled, chromophore-labeled, fluorophore-labeled, or enzyme-labeled antibody), an antibody derivative (*e.g.* an antibody conjugated with a substrate or with the protein or ligand of a protein-ligand pair {*e.g.* biotin-streptavidin}), or an antibody fragment (*e.g.* a single-chain antibody, an isolated antibody hypervariable domain, etc.)
15 which binds specifically with a protein corresponding to the marker, such as the protein encoded by the open reading frame corresponding to the marker or such a protein which has undergone all or a portion of its normal post-translational modification.

In another preferred embodiment, expression of a marker is assessed by preparing mRNA/cDNA (*i.e.* a transcribed polynucleotide) from cells in a patient
20 sample, and by hybridizing the mRNA/cDNA with a reference polynucleotide which is a complement of a polynucleotide comprising the marker, and fragments thereof. cDNA can, optionally, be amplified using any of a variety of polymerase chain reaction methods prior to hybridization with the reference polynucleotide; preferably, it is not amplified. Expression of one or more markers can likewise be detected using
25 quantitative PCR to assess the level of expression of the marker(s). Alternatively, any of the many known methods of detecting mutations or variants (*e.g.* single nucleotide polymorphisms, deletions, etc.) of a marker of the invention may be used to detect occurrence of a marker in a patient.

In a related embodiment, a mixture of transcribed polynucleotides obtained from
30 the sample is contacted with a substrate having fixed thereto a polynucleotide complementary to or homologous with at least a portion (*e.g.* at least 7, 10, 15, 20, 25, 30, 40, 50, 100, 500, or more nucleotide residues) of a marker of the invention. If

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polynucleotides complementary to or homologous with are differentially detectable on the substrate (e.g. detectable using different chromophores or fluorophores, or fixed to different selected positions), then the levels of expression of a plurality of markers can be assessed simultaneously using a single substrate (e.g. a "gene chip" microarray of polynucleotides fixed at selected positions). When a method of assessing marker expression is used which involves hybridization of one nucleic acid with another, it is preferred that the hybridization be performed under stringent hybridization conditions.

Because the compositions, kits, and methods of the invention rely on detection of a difference in expression levels of one or more markers of the invention, it is preferable that the level of expression of the marker is significantly greater than the minimum detection limit of the method used to assess expression in at least one of normal breast cells and cancerous breast cells.

It is understood that by routine screening of additional patient samples using one or more of the markers of the invention, it will be realized that certain of the markers are over- or under-expressed in cancers of various types, including specific breast cancers, as well as other cancers such as ovarian cancer, cervical cancer, etc. For example, it will be confirmed that some of the markers of the invention are over- or under-expressed in most (i.e. 50% or more) or substantially all (i.e. 80% or more) of breast cancer. Furthermore, it will be confirmed that certain of the markers of the invention are associated with breast cancer of various stages (i.e. stage 0, I, II, III, and IV breast cancers, as well as subclassifications IIA, IIB, IIIA, and IIIB, using the FIGO Stage Grouping system for primary carcinoma of the breast; (see Breast, In: *American Joint Committee on Cancer: AJCC Cancer Staging Manual*. Lippincott-Raven Publishers, 5th ed., 1997, pp 171-180), of various histologic subtypes (e.g. serous, mucinous, endometrioid, and clear cell subtypes, as well as subclassifications and alternate classifications adenocarcinoma, papillary adenocarcinoma, papillary cystadenocarcinoma, surface papillary carcinoma, malignant adenofibroma, cystadenofibroma, adenocarcinoma, cystadenocarcinoma, adenoacanthoma, endometrioid stromal sarcoma, mesodermal (Müllerian) mixed tumor, mesonephroid tumor, malignant carcinoma, Brenner tumor, mixed epithelial tumor, and undifferentiated carcinoma, using the WHO/FIGO system for classification of malignant breast tumors; Scully, *Atlas of Tumor Pathology*, 3d series, Washington DC), and

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various grades (*i.e.* grade I {well differentiated} , grade II {moderately well differentiated}, and grade III {poorly differentiated from surrounding normal tissue}). In addition, as a greater number of patient samples are assessed for expression of the markers of the invention and the outcomes of the individual patients from whom the samples were obtained are correlated, it will also be confirmed that altered expression of certain of the markers of the invention are strongly correlated with malignant cancers and that altered expression of other markers of the invention are strongly correlated with benign tumors. The compositions, kits, and methods of the invention are thus useful for characterizing one or more of the stage, grade, histological type, and benign/malignant nature of breast cancer in patients. In addition, these compositions, kits, and methods can be used to detect and differentiate lobular and ductal carcinoma breast cancers.

When the compositions, kits, and methods of the invention are used for characterizing one or more of the stage, grade, histological type, and benign/malignant nature of breast cancer in a patient, it is preferred that the marker or panel of markers of the invention is selected such that a positive result is obtained in at least about 20%, and preferably at least about 40%, 60%, or 80%, and more preferably in substantially all patients afflicted with an breast cancer of the corresponding stage, grade, histological type, or benign/malignant nature. Preferably, the marker or panel of markers of the invention is selected such that a PPV of greater than about 10% is obtained for the general population (more preferably coupled with an assay specificity greater than 99.5%).

When a plurality of markers of the invention are used in the compositions, kits, and methods of the invention, the level of expression of each marker in a patient sample can be compared with the normal level of expression of each of the plurality of markers in non-cancerous samples of the same type, either in a single reaction mixture (*i.e.* using reagents, such as different fluorescent probes, for each marker) or in individual reaction mixtures corresponding to one or more of the markers. In one embodiment, a significantly enhanced level of expression of more than one of the plurality of markers in the sample, relative to the corresponding normal levels, is an indication that the patient is afflicted with breast cancer. In another embodiment, a significantly lower level of expression in the sample of each of the plurality of markers, relative to the corresponding normal levels, is an indication that the patient is afflicted with breast

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cancer. In yet another embodiment, a significantly enhanced level of expression of one or more markers and a significantly lower level of expression of one or more markers in a sample relative to the corresponding normal levels, is an indication that the patient is afflicted with breast cancer. When a plurality of markers is used, it is preferred that 2, 3,
 5 4, 5, 8, 10, 12, 15, 20, 30, or 50 or more individual markers be used, wherein fewer markers are preferred.

In order to maximize the sensitivity of the compositions, kits, and methods of the invention (*i.e.* by interference attributable to cells of non-breast origin in a patient sample), it is preferable that the marker of the invention used therein be a marker which
 10 has a restricted tissue distribution, *e.g.*, normally not expressed in a non-breast tissue.

Only a small number of markers are known to be associated with breast cancers (*e.g.* *BRCA1* and *BRCA2*). These markers are not, of course, included among the markers of the invention, although they may be used together with one or more markers of the invention in a panel of markers, for example. It is well known that certain types
 15 of genes, such as oncogenes, tumor suppressor genes, growth factor-like genes, protease-like genes, and protein kinase-like genes are often involved with development of cancers of various types. Thus, among the markers of the invention, use of those which correspond to proteins which resemble known proteins encoded by known oncogenes and tumor suppressor genes, and those which correspond to proteins which
 20 resemble growth factors, proteases, and protein kinases are preferred.

Known oncogenes and tumor suppressor genes include, for example, *abl*, *abr*, *akt2*, *apc*, *bcl2 α* , *bcl2 β* , *bcl3*, *bcr*, *brca1*, *brca2*, *cbl*, *ccnd1*, *cdc42*, *cdk4*, *crk- II*, *csf1r/fms*, *dbl*, *dcc*, *dpc4/smad4*, *e-cad*, *e2f1/rbap*, *egfr/erbB-1*, *elk1*, *elk3*, *eph*, *erg*, *ets1*, *ets2*, *fer*, *fgr/src2*, *fli1/erbb2*, *fos*, *fps/fes*, *fra1*, *fra2*, *fyn*, *hck*, *hek*, *her2/erbB- 2/neu*,
 25 *her3/erbB-3*, *her4/erbB-4*, *hras1*, *hst2*, *hstf1*, *igfbp2*, *ink4a*, *ink4b*, *int2/fgf3*, *jun*, *junb*, *jund*, *kip2*, *kit*, *kras2a*, *kras2b*, *lck*, *lyn*, *mas*, *max*, *mcc*, *mdm2*, *met*, *mlh1*, *mmp10*, *mos*, *msh2*, *msh3*, *msh6*, *myb*, *myba*, *mybb*, *myc*, *mycl1*, *mycn*, *nfl*, *nf2*, *nme2*, *nras*, *p53*, *pdgfb*, *phb*, *pim1*, *pms1*, *pms2*, *ptc*, *pten*, *raf1*, *rap1a*, *rb1*, *rel*, *ret*, *ros1*, *ski*, *src1*, *tall*, *tgfb2*, *tgfb3*, *tgfb3*, *thra1*, *thrb*, *tiam1*, *timp3*, *tjp1*, *tp53*, *trk*, *vav*, *vhl*, *vil2*, *waf1*, *wnt1*,
 30 *wnt2*, *w11*, and *yes1* (Hesketh, 1997, In: *The Oncogene and Tumour Suppressor Gene Facts Book*, 2nd Ed., Academic Press; Fishel *et al.*, 1994, *Science* 266:1403-1405).

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Known growth factors include platelet-derived growth factor alpha, platelet-derived growth factor beta (simian sarcoma viral {v-sis} oncogene homolog), thrombopoietin (myeloproliferative leukemia virus oncogene ligand, megakaryocyte growth and development factor), erythropoietin, B cell growth factor, macrophage stimulating factor 1 (hepatocyte growth factor-like protein), hepatocyte growth factor (hepapoietin A), insulin-like growth factor 1 (somatomedia C), hepatoma-derived growth factor, amphiregulin (schwannoma-derived growth factor), bone morphogenetic proteins 1, 2, 3, 3 beta, and 4, bone morphogenetic protein 7 (osteogenic protein 1), bone morphogenetic protein 8 (osteogenic protein 2), connective tissue growth factor, connective tissue activation peptide 3, epidermal growth factor (EGF), teratocarcinoma-derived growth factor 1, endothelin, endothelin 2, endothelin 3, stromal cell-derived factor 1, vascular endothelial growth factor (VEGF), VEGF-B, VEGF-C, placental growth factor (vascular endothelial growth factor-related protein), transforming growth factor alpha, transforming growth factor beta 1 and its precursors, transforming growth factor beta 2 and its precursors, fibroblast growth factor 1 (acidic), fibroblast growth factor 2 (basic), fibroblast growth factor 5 and its precursors, fibroblast growth factor 6 and its precursors, fibroblast growth factor 7 (keratinocyte growth factor), fibroblast growth factor 8 (androgen-induced), fibroblast growth factor 9 (glia-activating factor), pleiotrophin (heparin binding growth factor 8, neurite growth-promoting factor 1), brain-derived neurotrophic factor, and recombinant glial growth factor 2.

Known proteases include interleukin-1 beta convertase and its precursors, Mch6 and its precursors, Mch2 isoform alpha, Mch4, Cpp32 isoform alpha, Lice2 gamma cysteine protease, Ich-1S, Ich-1L, Ich-2 and its precursors, TY protease, matrix metalloproteinase 1 (interstitial collagenase), matrix metalloproteinase 2 (gelatinase A, 72kD gelatinase, 72kD type IV collagenase), matrix metalloproteinase 7 (matrilysin), matrix metalloproteinase 8 (neutrophil collagenase), matrix metalloproteinase 12 (macrophage elastase), matrix metalloproteinase 13 (collagenase 3), metalloproteinase 1, cysteine-rich metalloproteinase (disintegrin) and its precursors, subtilisin-like protease Pc8 and its precursors, chymotrypsin, snake venom-like protease, cathepsin I, cathepsin D (lysosomal aspartyl protease), stromelysin, aminopeptidase N, plasminogen, tissue plasminogen activator, plasminogen activator inhibitor type II, and urokinase-type plasminogen activator.

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Known protein kinases include DAP kinase, serine/threonine protein kinases NIK, PK428, Krs-2, SAK, and EMK, interferon-inducible double stranded RNA dependent protein kinase, FAST kinase, AIM1, IPL1-like midbody-associated protein kinase-1, NIMA-like protein kinase 1 (NLK1), the cyclin-dependent kinases (cdk1-10),

5 checkpoint kinase Chk1, Nek3 protein kinase, BMK1 beta kinase, Clk1, Clk2, Clk3, extracellular signal-regulated kinases 1, 3, and 6, cdc28 protein kinase 1, cdc28 protein kinase 2, pLK, Myt1, c-Jun N-terminal kinase 2, Cam kinase 1, the MAP kinases, insulin-stimulated protein kinase 1, beta-adrenergic receptor kinase 2, ribosomal protein S6 kinase, kinase suppressor of ras-1 (KSR1), putative serine/threonine protein kinase

10 Prk, PkB kinase, cAMP-dependent protein kinase, cGMP-dependent protein kinase, type II cGMP-dependent protein kinase, protein kinases Dyrk2, Dyrk3, and Dyrk4, Rho-associated coiled-coil containing protein kinase p160ROCK, protein tyrosine kinase t-Ror1, Ste20-related kinases, cell adhesion kinase beta, protein kinase 3, stress-activated protein kinase 4, protein kinase Zpk, serine kinase hPAK65, dual specificity mitogen-

15 activated protein kinases 1 and 2, casein kinase I gamma 2, p21-activated protein kinase Pak1, lipid-activated protein kinase PRK2, focal adhesion kinase, dual-specificity tyrosine-phosphorylation regulated kinase, myosin light chain kinase, serine kinases SRPK2, TESK1, and VRK2, B lymphocyte serine/threonine protein kinase, stress-activated protein kinases JNK1 and JNK2, phosphorylase kinase, protein tyrosine kinase

20 Tec, Jak2 kinase, protein kinase Ndr, MEK kinase 3, SHB adaptor protein (a Src homology 2 protein), agammaglobulinaemia protein-tyrosine kinase (Atk), protein kinase ATR, guanylate kinase 1, thrombopoietin receptor and its precursors, DAG kinase epsilon, and kinases encoded by oncogenes or viral oncogenes such as v-fgr (Gardner-Rasheed), v-abl (Abelson murine leukemia viral oncogene homolog 1), v-arg

25 (Abelson murine leukemia viral oncogene homolog, Abelson-related gene), v-fes and v-fps (feline sarcoma viral oncogene and Fujinami avian sarcoma viral oncogene homologs), proto-oncogene *c-cot*, oncogene *pim-1*, and oncogene *mas1*.

It is recognized that the compositions, kits, and methods of the invention will be of particular utility to patients having an enhanced risk of developing breast cancer and

30 their medical advisors. Patients recognized as having an enhanced risk of developing breast cancer include, for example, patients having a familial history of breast cancer,

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patients identified as having a mutant oncogene (*i.e.* at least one allele), and patients of advancing age (*i.e.* women older than about 50 or 60 years).

5 The level of expression of a marker in normal (*i.e.* non-cancerous) human breast tissue can be assessed in a variety of ways. In one embodiment, this normal level of expression is assessed by assessing the level of expression of the marker in a portion of breast cells which appears to be non-cancerous and by comparing this normal level of expression with the level of expression in a portion of the breast cells which is suspected of being cancerous. For example, when mammography or other medical procedure, reveals the presence of a lump in a patient's breast, the normal level of expression of a marker may be assessed using the non-affected breast tissue, and this normal level of expression may be compared with the level of expression of the same marker in an affected portion (*i.e.* the lump) of the affected breast. Alternately, and particularly as further information becomes available as a result of routine performance of the methods described herein, population-average values for normal expression of the markers of the invention may be used. In other embodiments, the 'normal' level of expression of a marker may be determined by assessing expression of the marker in a patient sample obtained from a non-cancer-afflicted patient, from a patient sample obtained from a patient before the suspected onset of breast cancer in the patient, from archived patient samples, and the like.

20 The invention includes compositions, kits, and methods for assessing the presence of breast cancer cells in a sample (*e.g.* an archived tissue sample or a sample obtained from a patient). These compositions, kits, and methods are substantially the same as those described above, except that, where necessary, the compositions, kits, and methods are adapted for use with samples other than patient samples. For example, when the sample to be used is a paraffinized, archived human tissue sample, it can be necessary to adjust the ratio of compounds in the compositions of the invention, in the kits of the invention, or the methods used to assess levels of marker expression in the sample. Such methods are well known in the art and within the skill of the ordinary artisan.

30 The invention includes a kit for assessing the presence of breast cancer cells (*e.g.* in a sample such as a patient sample). The kit comprises a plurality of reagents, each of which is capable of binding specifically with a nucleic acid or polypeptide

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corresponding to a marker of the invention. Suitable reagents for binding with a polypeptide corresponding to a marker of the invention include antibodies, antibody derivatives, antibody fragments, and the like. Suitable reagents for binding with a nucleic acid (*e.g.* a genomic DNA, an mRNA, a spliced mRNA, a cDNA, or the like) include complementary nucleic acids. For example, the nucleic acid reagents may include oligonucleotides (labeled or non-labeled) fixed to a substrate, labeled oligonucleotides not bound with a substrate, pairs of PCR primers, molecular beacon probes, and the like.

The kit of the invention may optionally comprise additional components useful for performing the methods of the invention. By way of example, the kit may comprise fluids (*e.g.* SSC buffer) suitable for annealing complementary nucleic acids or for binding an antibody with a protein with which it specifically binds, one or more sample compartments, an instructional material which describes performance of a method of the invention, a sample of normal breast cells, a sample of breast cancer cells, and the like.

The invention also includes a method of making an isolated hybridoma which produces an antibody useful for assessing whether patient is afflicted with breast cancer. In this method, a protein corresponding to a marker of the invention or a fragment of the protein is isolated (*e.g.* by purification from a cell in which it is expressed or by transcription and translation of a nucleic acid encoding the protein *in vivo* or *in vitro* using known methods). A vertebrate, preferably a mammal such as a mouse, rat, rabbit, or sheep, is immunized using the isolated protein or fragment thereof. The vertebrate may optionally (and preferably) be immunized at least one additional time with the isolated protein or fragment, so that the vertebrate exhibits a robust immune response to the protein. Splenocytes are isolated from the immunized vertebrate and fused with an immortalized cell line to form hybridomas, using any of a variety of methods well known in the art. Hybridomas formed in this manner are then screened using standard methods to identify one or more hybridomas which produce an antibody which specifically binds with the protein. The invention also includes hybridomas made by this method and antibodies made using such hybridomas.

The invention also includes a method of assessing the efficacy of a test compound for inhibiting breast cancer cells. As described above, differences in the level of expression of the markers of the invention correlate with the cancerous state of breast

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cells. Although it is recognized that changes in the levels of expression of certain of the markers of the invention likely result from the cancerous state of breast cells, it is likewise recognized that changes in the levels of expression of other of the markers of the invention induce, maintain, and promote the cancerous state of those cells. Thus, 5 compounds which inhibit breast cancer in a patient will cause the level of expression of one or more of the markers of the invention to change to a level nearer the normal level of expression for that marker (*i.e.* the level of expression for the marker in non-cancerous breast cells).

This method thus comprises comparing expression of a marker in a first breast 10 cell sample and maintained in the presence of the test compound and expression of the marker in a second breast cell sample and maintained in the absence of the test compound. A significant alteration in the level of expression of a marker listed in one or all of Tables 1-21, is an indication that the test compound inhibits breast cancer. The breast cell samples may, for example, be aliquots of a single sample of normal breast 15 cells obtained from a patient, pooled samples of normal breast cells obtained from a patient, cells of a normal breast cell line, aliquots of a single sample of breast cancer cells obtained from a patient, pooled samples of breast cancer cells obtained from a patient, cells of a breast cancer cell line, or the like. In one embodiment, the samples are breast cancer cells obtained from a patient and a plurality of compounds known to be 20 effective for inhibiting various breast cancers are tested in order to identify the compound which is likely to best inhibit the breast cancer in the patient.

This method may likewise be used to assess the efficacy of a therapy for inhibiting breast cancer in a patient. In this method, the level of expression of one or more markers of the invention in a pair of samples (one subjected to the therapy, the 25 other not subjected to the therapy) is assessed. As with the method of assessing the efficacy of test compounds, if the therapy induces a significant alteration in the level of expression of a marker listed in Tables 1-21 (*e.g.* decreases expression in those markers that are over-expressed in breast cancer cells or increases expression in those markers that are under-expressed in breast cancer cells decreases expression in those markers 30 that are over-expressed in more aggressive breast cancer cells and breast cancer cells from patients with poor clinical outcome or increases expression in those markers that are under-expressed in more aggressive breast cancer cells and in breast cancer cells

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from patients with poor clinical outcome), or blocks induction of a marker listed in Tables 1-21, then the therapy is efficacious for inhibiting breast cancer. As above, if samples from a selected patient are used in this method, then alternative therapies can be assessed *in vitro* in order to select a therapy most likely to be efficacious for inhibiting breast cancer in the patient.

As described herein, breast cancer in patients is associated with an increase in the level of expression of one or more markers listed in Tables 1-21. While, as discussed above, some of these changes in expression level result from occurrence of the breast cancer, others of these changes induce, maintain, and promote the cancerous state of breast cancer cells. Thus, breast cancer characterized by an increase in the level of expression of one or more markers listed in Tables 1-21 can be inhibited by hampering expression of those markers.

Expression of a marker listed in Table 1-7 can be inhibited in a number of ways generally known in the art. For example, an antisense oligonucleotide can be provided to the breast cancer cells in order to inhibit transcription, translation, or both, of the marker(s). Alternately, a polynucleotide encoding an antibody, an antibody derivative, or an antibody fragment, and operably linked with an appropriate promoter/regulator region, can be provided to the cell in order to generate intracellular antibodies which will inhibit the function or activity of the protein corresponding to the marker(s). Using the methods described herein, a variety of molecules, particularly including molecules sufficiently small that they are able to cross the cell membrane, can be screened in order to identify molecules which inhibit expression of the marker(s). The compound so identified can be provided to the patient in order to inhibit expression of the marker(s) in the breast cancer cells of the patient.

As described above, the cancerous state of human breast cells is correlated with changes in the levels of expression of the markers of the invention. Thus, compounds which induce increased or decreased expression of one or more of the markers listed in Tables 1-21, can induce breast cell carcinogenesis. The invention includes a method for assessing the human breast cell carcinogenic potential of a test compound. This method comprises maintaining separate aliquots of human breast cells in the presence and absence of the test compound. Expression of a marker of the invention in each of the aliquots is compared. A significant alteration in the level of expression of a marker

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listed in Tables 1-21 in the aliquot maintained in the presence of the test compound (relative to the aliquot maintained in the absence of the test compound) may be an indication that the test compound possesses human breast cell carcinogenic potential. The relative carcinogenic potentials of various test compounds can be assessed by
5 comparing the degree of enhancement or inhibition of the level of expression of the relevant markers, by comparing the number of markers for which the level of expression is enhanced or inhibited, or by comparing both.

Various aspects of the invention are described in further detail in the following subsections.

10

I. Isolated Nucleic Acid Molecules

One aspect of the invention pertains to isolated nucleic acid molecules that correspond to a marker of the invention, including nucleic acids which encode a polypeptide corresponding to a marker of the invention or a portion of such a
15 polypeptide. Isolated nucleic acids of the invention also include nucleic acid molecules sufficient for use as hybridization probes to identify nucleic acid molecules that correspond to a marker of the invention, including nucleic acids which encode a polypeptide corresponding to a marker of the invention, and fragments of such nucleic acid molecules, *e.g.*, those suitable for use as PCR primers for the amplification or
20 mutation of nucleic acid molecules. As used herein, the term "nucleic acid molecule" is intended to include DNA molecules (*e.g.*, cDNA or genomic DNA) and RNA molecules (*e.g.*, mRNA) and analogs of the DNA or RNA generated using nucleotide analogs. The nucleic acid molecule can be single-stranded or double-stranded, but preferably is double-stranded DNA.

25 An "isolated" nucleic acid molecule is one which is separated from other nucleic acid molecules which are present in the natural source of the nucleic acid molecule. Preferably, an "isolated" nucleic acid molecule is free of sequences (preferably protein-encoding sequences) which naturally flank the nucleic acid (*i.e.*, sequences located at the 5' and 3' ends of the nucleic acid) in the genomic DNA of the organism from which the
30 nucleic acid is derived. For example, in various embodiments, the isolated nucleic acid molecule can contain less than about 5 kB, 4 kB, 3 kB, 2 kB, 1 kB, 0.5 kB or 0.1 kB of nucleotide sequences which naturally flank the nucleic acid molecule in genomic DNA.

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of the cell from which the nucleic acid is derived. Moreover, an "isolated" nucleic acid molecule, such as a cDNA molecule, can be substantially free of other cellular material, or culture medium when produced by recombinant techniques, or substantially free of chemical precursors or other chemicals when chemically synthesized.

5 A nucleic acid molecule of the present invention, *e.g.*, a nucleic acid encoding a protein corresponding to a marker listed in one or more of Tables 1-21, can be isolated using standard molecular biology techniques and the sequence information in the database records described herein. Using all or a portion of such nucleic acid sequences, nucleic acid molecules of the invention can be isolated using standard hybridization and
10 cloning techniques (*e.g.*, as described in Sambrook *et al.*, ed., *Molecular Cloning: A Laboratory Manual*, 2nd ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, 1989).

A process for identifying a larger fragment or the full-length coding sequence of a marker of the present invention is thus also provided. Any conventional recombinant
15 DNA techniques applicable for isolating polynucleotides may also be employed. One such method involves the 5'-RACE-PCR technique, in which the poly-A mRNA that contains the coding sequence of particular interest is first reverse transcribed with a 3'-primer comprising a sequence disclosed herein. The newly synthesized cDNA strand is then tagged with an anchor primer with a known sequence, which preferably contains a
20 convenient cloning restriction site attached at the 5' end. The tagged cDNA is then amplified with the 3'-primer (or a nested primer sharing sequence homology to the internal sequences of the coding region) and the 5'-anchor primer. The amplification may be conducted under conditions of various levels of stringency to optimize the amplification specificity. 5'-RACE-PCR can be readily performed using commercial kits
25 (available from, *e.g.*, BRL Life Technologies Inc., Clontech) according to the manufacturer's instructions.

Isolating the complete coding sequence of a gene can also be carried out in a hybridization assay using a suitable probe. The probe preferably comprises at least 10 nucleotides, and more preferably exhibits sequence homology to the polynucleotides of
30 the markers of the present invention. Other high throughput screens for cDNAs, such as those involving gene chip technology, can also be employed in obtaining the complete cDNA sequence.

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In addition, databases exist that reduce the complexity of ESTs by assembling contiguous EST sequences into tentative genes. For example, TIGR has assembled human ESTs into a databse called THC for tentative human consensus sequences. The THC database allows for a more definitive assignment compared to ESTs alone.

- 5 Software programs exist (TIGR assembler and TIGEM EST assembly machine and contig assembly program (see Huang, X., 1996, *Genomes* 33:21-23)) that allow for assembling ESTs into contiguous sequences from any organism.

- Alternatively, mRNA from a sample preparation is used to construct cDNA library in the ZAP Express vector following the procedure described in Velculescu *et al.*, 1997, *Science* 270:484. The ZAP Express cDNA synthesis kit (Stratagene) is used
10 accordingly to the manufacturer's protocol. Plates containing 250 to 2000 plaques are hybridized as described in Rupert *et al.*, 1988, *Mol. Cell. Bio.* 8:3104 to oligonucleotide probes with the same conditions previously described for standard probes except that the hybridization temperature is reduced to a room temperature. Washes are performed in
15 6X standard-saline-citrate 0.1% SDS for 30 minutes at room temperature. The probes are labeled with ³²P-ATP through use of T4 polynucleotide kinase.

- A partial cDNA (3' fragment) can be isolated by 3' directed PCR reaction. This procedure is a modification of the protocol described in Polyak *et al.*, 1997, *Nature* 389:300. Briefly, the procedure uses SAGE tags in PCR reaction such that the resultant
20 PCR product contains the SAGE tag of interest as well as additional cDNA, the length of which is defined by the position of the tag with respect to the 3' end of the cDNA. The cDNA product derived from such a transcript driven PCR reaction can be used for many applications.

- RNA from a source to express the cDNA corresponding to a given tag is first
25 converted to double-stranded cDNA using any standard cDNA protocol. Similar conditions used to generate cDNA for SAGE library construction can be employed except that a modified oligo-dT primer is used to derive the first strand synthesis. For example, the oligonucleotide of composition 5'-B-TCC GGC GCG CCG TTT TCC CAG TCA CGA(30)-3', contains a poly-T stretch at the 3' end for hybridization and
30 priming from poly-A tails, an M13 priming site for use in subsequent PCR steps, a 5' Biotin label (B) for capture to strepavidin-coated magnetic beads, and an AscI restriction endonuclease site for releasing the cDNA from the strepavidin-coated magnetic beads.

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Theoretically, any sufficiently-sized DNA region capable of hybridizing to a PCR primer can be used as well as any other 8 base pair recognizing endonuclease.

cDNA constructed utilizing this or similar modified oligo-dT primer is then processed exactly as described in U.S. Patent No. 5,695,937 up until adapter ligation
5 where only one adapter is ligated to the cDNA pool. After Adapter ligation, the cDNA is released from the streptavidin-coated magnetic beads and is then used as a template for cDNA amplification.

Various PCR protocols can be employed using PCR priming sites within the 3' modified oligo-dT primer and the SAGE tag. The SAGE tag-derived PCR primer
10 employed can be of varying length dictated by 5' extension of the tag into the adaptor sequence. cDNA products are now available for a variety of applications.

This technique can be further modified by: (1) altering the length and/or content of the modified oligo-dT primer; (2) ligating adaptors other than that previously employed within the SAGE protocol; (3) performing PCR from template retained on the
15 streptavidin-coated magnetic beads; and (4) priming first strand cDNA synthesis with non-oligo-dT based primers.

Gene trapper technology can also be used. The reagents and manufacturer's instructions for this technology are commercially available from Life Technologies, Inc., Gaithersburg, Maryland. Briefly, a complex population of single-stranded phagemid
20 DNA containing directional cDNA inserts is enriched for the target sequence by hybridization in solution to a biotinylated oligonucleotide probe complementary to the target sequence. The hybrids are captured on streptavidin-coated paramagnetic beads. A magnet retrieves the paramagnetic beads from the solution, leaving nonhybridized single-stranded DNAs behind. Subsequently, the captured single-stranded DNA target
25 is released from the biotinylated oligonucleotide. After release, the cDNA clone is further enriched by using a nonbiotinylated target oligonucleotide to specifically prime conversion of the single-stranded DNA. Following transformation and plating, typically 20% to 100% of the colonies represent the cDNA clone of interest. To identify the desired cDNA clone, the colonies may be screened by colony hybridization using the
30 ³²P-labeled oligonucleotide as described above for solution hybridization, or alternatively by DNA sequencing and alignment of all sequences obtained from numerous clones to determine a consensus sequence.

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A nucleic acid molecule of the invention can be amplified using cDNA, mRNA, or genomic DNA as a template and appropriate oligonucleotide primers according to standard PCR amplification techniques. The nucleic acid so amplified can be cloned into an appropriate vector and characterized by DNA sequence analysis. Furthermore,
5 oligonucleotides corresponding to all or a portion of a nucleic acid molecule of the invention can be prepared by standard synthetic techniques, *e.g.*, using an automated DNA synthesizer.

In another preferred embodiment, an isolated nucleic acid molecule of the invention comprises a nucleic acid molecule which has a nucleotide sequence
10 complementary to the nucleotide sequence of a nucleic acid corresponding to a marker of the invention or to the nucleotide sequence of a nucleic acid encoding a protein which corresponds to a marker of the invention. A nucleic acid molecule which is complementary to a given nucleotide sequence is one which is sufficiently complementary to the given nucleotide sequence that it can hybridize to the given
15 nucleotide sequence thereby forming a stable duplex.

Moreover, a nucleic acid molecule of the invention can comprise only a portion of a nucleic acid sequence, wherein the full length nucleic acid sequence comprises a marker of the invention or which encodes a polypeptide corresponding to a marker of the invention. Such nucleic acids can be used, for example, as a probe or primer. The
20 probe/primer typically is used as one or more substantially purified oligonucleotides. The oligonucleotide typically comprises a region of nucleotide sequence that hybridizes under stringent conditions to at least about 7, preferably about 15, more preferably about 25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, or 400 or more consecutive nucleotides of a nucleic acid of the invention.

25 Probes based on the sequence of a nucleic acid molecule of the invention can be used to detect transcripts or genomic sequences corresponding to one or more markers of the invention. The probe comprises a label group attached thereto, *e.g.*, a radioisotope, a fluorescent compound, an enzyme, or an enzyme co-factor. Such probes can be used as part of a diagnostic test kit for identifying cells or tissues which mis-
30 express the protein, such as by measuring levels of a nucleic acid molecule encoding the protein in a sample of cells from a subject, *e.g.*, detecting mRNA levels or determining whether a gene encoding the protein has been mutated or deleted.

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The invention further encompasses nucleic acid molecules that differ, due to degeneracy of the genetic code, from the nucleotide sequence of nucleic acids encoding a protein which corresponds to a marker of the invention, and thus encode the same protein.

5 In addition to the nucleotide sequences described in the GenBank and IMAGE Consortium database records described herein and in Tables 1-21, it will be appreciated by those skilled in the art that DNA sequence polymorphisms that lead to changes in the amino acid sequence can exist within a population (*e.g.*, the human population). Such genetic polymorphisms can exist among individuals within a population due to natural
10 allelic variation. An allele is one of a group of genes which occur alternatively at a given genetic locus. In addition, it will be appreciated that DNA polymorphisms that affect RNA expression levels can also exist that may affect the overall expression level of that gene (*e.g.*, by affecting regulation or degradation).

As used herein, the phrase "allelic variant" refers to a nucleotide sequence which
15 occurs at a given locus or to a polypeptide encoded by the nucleotide sequence.

As used herein, the terms "gene" and "recombinant gene" refer to nucleic acid molecules comprising an open reading frame encoding a polypeptide corresponding to a marker of the invention. Such natural allelic variations can typically result in 0.1-0.5% variance in the nucleotide sequence of a given gene. Alternative alleles can be identified
20 by sequencing the gene of interest in a number of different individuals. This can be readily carried out by using hybridization probes to identify the same genetic locus in a variety of individuals. Any and all such nucleotide variations and resulting amino acid polymorphisms or variations that are the result of natural allelic variation and that do not alter the functional activity are intended to be within the scope of the invention.

25 In another embodiment, an isolated nucleic acid molecule of the invention is at least 7, 15, 20, 25, 30, 40, 60, 80, 100, 150, 200, 250, 300, 350, 400, 450, 550, 650, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000, 2200, 2400, 2600, 2800, 3000, 3500, 4000, 4500, or more nucleotides in length and hybridizes under stringent conditions to a nucleic acid corresponding to a marker of the invention or to a nucleic acid encoding a
30 protein corresponding to a marker of the invention. As used herein, the term "hybridizes under stringent conditions" is intended to describe conditions for hybridization and washing under which nucleotide sequences at least 75% (80%, 85%, preferably 90%)

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identical to each other typically remain hybridized to each other. Such stringent conditions are known to those skilled in the art and can be found in sections 6.3.1-6.3.6 of *Current Protocols in Molecular Biology*, John Wiley & Sons, N.Y. (1989). A preferred, non-limiting example of stringent hybridization conditions for annealing two single-stranded DNA each of which is at least about 100 bases in length and/or for annealing a single-stranded DNA and a single-stranded RNA each of which is at least about 100 bases in length, are hybridization in 6X sodium chloride/sodium citrate (SSC) at about 45°C, followed by one or more washes in 0.2X SSC, 0.1% SDS at 50-65°C. Further preferred hybridization conditions are taught in Lockhart, *et al.*, Nature Biotechnology, Volume 14, 1996 August:1675-1680; Breslauer, *et al.*, Proc. Natl. Acad. Sci. USA, Volume 83, 1986 June: 3746-3750; Van Ness, *et al.*, Nucleic Acids Research, Volume 19, No. 19, 1991 September: 5143-5151; McGraw, *et al.*, BioTechniques, Volume 8, No. 6 1990: 674-678; and Milner, *et al.*, Nature Biotechnology, Volume 15, 1997 June: 537-541, all expressly incorporated by reference.

In addition to naturally-occurring allelic variants of a nucleic acid molecule of the invention that can exist in the population, the skilled artisan will further appreciate that sequence changes can be introduced by mutation thereby leading to changes in the amino acid sequence of the encoded protein, without altering the biological activity of the protein encoded thereby. For example, one can make nucleotide substitutions leading to amino acid substitutions at "non-essential" amino acid residues. A "non-essential" amino acid residue is a residue that can be altered from the wild-type sequence without altering the biological activity, whereas an "essential" amino acid residue is required for biological activity. For example, amino acid residues that are not conserved or only semi-conserved among homologs of various species may be non-essential for activity and thus would be likely targets for alteration. Alternatively, amino acid residues that are conserved among the homologs of various species (*e.g.*, murine and human) may be essential for activity and thus would not be likely targets for alteration.

Accordingly, another aspect of the invention pertains to nucleic acid molecules encoding a polypeptide of the invention that contain changes in amino acid residues that are not essential for activity. Such polypeptides differ in amino acid sequence from the naturally-occurring proteins which correspond to the markers of the invention, yet retain

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biological activity. In one embodiment, such a protein has an amino acid sequence that is at least about 40% identical, 50%, 60%, 70%, 80%, 90%, 95%, or 98% identical to the amino acid sequence of one of the proteins which correspond to the markers of the invention.

5 An isolated nucleic acid molecule encoding a variant protein can be created by introducing one or more nucleotide substitutions, additions or deletions into the nucleotide sequence of nucleic acids of the invention, such that one or more amino acid residue substitutions, additions, or deletions are introduced into the encoded protein. Mutations can be introduced by standard techniques, such as site-directed mutagenesis and PCR-mediated mutagenesis. Preferably, conservative amino acid substitutions are
10 made at one or more predicted non-essential amino acid residues. A "conservative amino acid substitution" is one in which the amino acid residue is replaced with an amino acid residue having a similar side chain. Families of amino acid residues having similar side chains have been defined in the art. These families include amino acids
15 with basic side chains (*e.g.*, lysine, arginine, histidine), acidic side chains (*e.g.*, aspartic acid, glutamic acid), uncharged polar side chains (*e.g.*, glycine, asparagine, glutamine, serine, threonine, tyrosine, cysteine), non-polar side chains (*e.g.*, alanine, valine, leucine, isoleucine, proline, phenylalanine, methionine, tryptophan), beta-branched side chains (*e.g.*, threonine, valine, isoleucine) and aromatic side chains (*e.g.*, tyrosine,
20 phenylalanine, tryptophan, histidine). Alternatively, mutations can be introduced randomly along all or part of the coding sequence, such as by saturation mutagenesis, and the resultant mutants can be screened for biological activity to identify mutants that retain activity. Following mutagenesis, the encoded protein can be expressed recombinantly and the activity of the protein can be determined.

25 The present invention encompasses antisense nucleic acid molecules, *i.e.*, molecules which are complementary to a sense nucleic acid of the invention, *e.g.*, complementary to the coding strand of a double-stranded cDNA molecule corresponding to a marker of the invention or complementary to an mRNA sequence corresponding to a marker of the invention. Accordingly, an antisense nucleic acid of
30 the invention can hydrogen bond to (*i.e.* anneal with) a sense nucleic acid of the invention. The antisense nucleic acid can be complementary to an entire coding strand, or to only a portion thereof, *e.g.*, all or part of the protein coding region (or open reading

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frame). An antisense nucleic acid molecule can also be antisense to all or part of a non-coding region of the coding strand of a nucleotide sequence encoding a polypeptide of the invention. The non-coding regions ("5' and 3' untranslated regions") are the 5' and 3' sequences which flank the coding region and are not translated into amino acids.

5 An antisense oligonucleotide can be, for example, about 5, 10, 15, 20, 25, 30, 35, 40, 45, or 50 or more nucleotides in length. An antisense nucleic acid of the invention can be constructed using chemical synthesis and enzymatic ligation reactions using procedures known in the art. For example, an antisense nucleic acid (e.g., an antisense oligonucleotide) can be chemically synthesized using naturally occurring nucleotides or
10 variously modified nucleotides designed to increase the biological stability of the molecules or to increase the physical stability of the duplex formed between the antisense and sense nucleic acids, e.g., phosphorothioate derivatives and acridine substituted nucleotides can be used. Examples of modified nucleotides which can be used to generate the antisense nucleic acid include 5-fluorouracil, 5-bromouracil, 5-
15 chlorouracil, 5-iodouracil, hypoxanthine, xanthine, 4-acetylcytosine, 5-(carboxyhydroxymethyl) uracil, 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine, 7-
20 methylguanine, 5-methylaminomethyluracil, 5-methoxyaminomethyl-2-thiouracil, beta-D-mannosylqueosine, 5'-methoxycarboxymethyluracil, 5-methoxyuracil, 2-methylthio-N6-isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-thiouracil, 5-methyluracil, uracil-5-oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-
25 2-thiouracil, 3-(3-amino-3-N-2-carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine. Alternatively, the antisense nucleic acid can be produced biologically using an expression vector into which a nucleic acid has been sub-cloned in an antisense orientation (i.e., RNA transcribed from the inserted nucleic acid will be of an antisense orientation to a target nucleic acid of interest, described further in the following
30 subsection).

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The antisense nucleic acid molecules of the invention are typically administered to a subject or generated *in situ* such that they hybridize with or bind to cellular mRNA and/or genomic DNA encoding a polypeptide corresponding to a selected marker of the invention to thereby inhibit expression of the marker, *e.g.*, by inhibiting transcription and/or translation. The hybridization can be by conventional nucleotide complementarity to form a stable duplex, or, for example, in the case of an antisense nucleic acid molecule which binds to DNA duplexes, through specific interactions in the major groove of the double helix. Examples of a route of administration of antisense nucleic acid molecules of the invention includes direct injection at a tissue site or infusion of the antisense nucleic acid into an breast-associated body fluid. Alternatively, antisense nucleic acid molecules can be modified to target selected cells and then administered systemically. For example, for systemic administration, antisense molecules can be modified such that they specifically bind to receptors or antigens expressed on a selected cell surface, *e.g.*, by linking the antisense nucleic acid molecules to peptides or antibodies which bind to cell surface receptors or antigens. The antisense nucleic acid molecules can also be delivered to cells using the vectors described herein. To achieve sufficient intracellular concentrations of the antisense molecules, vector constructs in which the antisense nucleic acid molecule is placed under the control of a strong pol II or pol III promoter are preferred.

An antisense nucleic acid molecule of the invention can be an α -anomeric nucleic acid molecule. An α -anomeric nucleic acid molecule forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual α -units, the strands run parallel to each other (Gaultier *et al.*, 1987, *Nucleic Acids Res.* 15:6625-6641). The antisense nucleic acid molecule can also comprise a 2'-O-methylribonucleotide (Inoue *et al.*, 1987, *Nucleic Acids Res.* 15:6131-6148) or a chimeric RNA-DNA analogue (Inoue *et al.*, 1987, *FEBS Lett.* 215:327-330).

The invention also encompasses ribozymes. Ribozymes are catalytic RNA molecules with ribonuclease activity which are capable of cleaving a single-stranded nucleic acid, such as an mRNA, to which they have a complementary region. Thus, ribozymes (*e.g.*, hammerhead ribozymes as described in Haselhoff and Gerlach, 1988, *Nature* 334:585-591) can be used to catalytically cleave mRNA transcripts to thereby inhibit translation of the protein encoded by the mRNA. A ribozyme having specificity

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for a nucleic acid molecule encoding a polypeptide corresponding to a marker of the invention can be designed based upon the nucleotide sequence of a cDNA corresponding to the marker. For example, a derivative of a *Tetrahymena* L-19 IVS RNA can be constructed in which the nucleotide sequence of the active site is

5 complementary to the nucleotide sequence to be cleaved (see Cech *et al.* U.S. Patent No. 4,987,071; and Cech *et al.* U.S. Patent No. 5,116,742). Alternatively, an mRNA encoding a polypeptide of the invention can be used to select a catalytic RNA having a specific ribonuclease activity from a pool of RNA molecules (see, *e.g.*, Bartel and Szostak, 1993, *Science* 261:1411-1418).

10 The invention also encompasses nucleic acid molecules which form triple helical structures. For example, expression of a polypeptide of the invention can be inhibited by targeting nucleotide sequences complementary to the regulatory region of the gene encoding the polypeptide (*e.g.*, the promoter and/or enhancer) to form triple helical structures that prevent transcription of the gene in target cells. See generally Helene
15 (1991) *Anticancer Drug Des.* 6(6):569-84; Helene (1992) *Ann. N.Y. Acad. Sci.* 660:27-36; and Maher (1992) *Bioassays* 14(12):807-15.

In various embodiments, the nucleic acid molecules of the invention can be modified at the base moiety, sugar moiety or phosphate backbone to improve, *e.g.*, the stability, hybridization, or solubility of the molecule. For example, the deoxyribose
20 phosphate backbone of the nucleic acids can be modified to generate peptide nucleic acids (see Hyrup *et al.*, 1996, *Bioorganic & Medicinal Chemistry* 4(1): 5-23). As used herein, the terms "peptide nucleic acids" or "PNAs" refer to nucleic acid mimics, *e.g.*, DNA mimics, in which the deoxyribose phosphate backbone is replaced by a pseudopeptide backbone and only the four natural nucleobases are retained. The neutral
25 backbone of PNAs has been shown to allow for specific hybridization to DNA and RNA under conditions of low ionic strength. The synthesis of PNA oligomers can be performed using standard solid phase peptide synthesis protocols as described in Hyrup *et al.* (1996), *supra*; Perry-O'Keefe *et al.* (1996) *Proc. Natl. Acad. Sci. USA* 93:14670-675.

30 PNAs can be used in therapeutic and diagnostic applications. For example, PNAs can be used as antisense or antigene agents for sequence-specific modulation of gene expression by, *e.g.*, inducing transcription or translation arrest or inhibiting

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replication. PNAs can also be used, *e.g.*, in the analysis of single base pair mutations in a gene by, *e.g.*, PNA directed PCR clamping; as artificial restriction enzymes when used in combination with other enzymes, *e.g.*, S1 nucleases (Hyrup (1996), *supra*), or as probes or primers for DNA sequence and hybridization (Hyrup, 1996, *supra*; Perry-O'Keefe *et al.*, 1996, *Proc. Natl. Acad. Sci. USA* 93:14670-675).

In another embodiment, PNAs can be modified, *e.g.*, to enhance their stability or cellular uptake, by attaching lipophilic or other helper groups to PNA, by the formation of PNA-DNA chimeras, or by the use of liposomes or other techniques of drug delivery known in the art. For example, PNA-DNA chimeras can be generated which can combine the advantageous properties of PNA and DNA. Such chimeras allow DNA recognition enzymes, *e.g.*, RNASE H and DNA polymerases, to interact with the DNA portion while the PNA portion would provide high binding affinity and specificity. PNA-DNA chimeras can be linked using linkers of appropriate lengths selected in terms of base stacking, number of bonds between the nucleobases, and orientation (Hyrup, 1996, *supra*). The synthesis of PNA-DNA chimeras can be performed as described in Hyrup (1996), *supra*, and Finn *et al.* (1996) *Nucleic Acids Res.* 24(17):3357-63. For example, a DNA chain can be synthesized on a solid support using standard phosphoramidite coupling chemistry and modified nucleoside analogs. Compounds such as 5'-(4-methoxytrityl)amino-5'-deoxy-thymidine phosphoramidite can be used as a link between the PNA and the 5' end of DNA (Mag *et al.*, 1989, *Nucleic Acids Res.* 17:5973-88). PNA monomers are then coupled in a step-wise manner to produce a chimeric molecule with a 5' PNA segment and a 3' DNA segment (Finn *et al.*, 1996, *Nucleic Acids Res.* 24(17):3357-63). Alternatively, chimeric molecules can be synthesized with a 5' DNA segment and a 3' PNA segment (Peterser *et al.*, 1975, *Bioorganic Med. Chem. Lett.* 5:1119-11124).

In other embodiments, the oligonucleotide can include other appended groups such as peptides (*e.g.*, for targeting host cell receptors *in vivo*), or agents facilitating transport across the cell membrane (see, *e.g.*, Letsinger *et al.*, 1989, *Proc. Natl. Acad. Sci. USA* 86:6553-6556; Lemaitre *et al.*, 1987, *Proc. Natl. Acad. Sci. USA* 84:648-652; PCT Publication No. WO 88/09810) or the blood-brain barrier (see, *e.g.*, PCT Publication No. WO 89/10134). In addition, oligonucleotides can be modified with hybridization-triggered cleavage agents (see, *e.g.*, Krol *et al.*, 1988, *Bio/Techniques*

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6:958-976) or intercalating agents (see, *e.g.*, Zon, 1988, *Pharm. Res.* 5:539-549). To this end, the oligonucleotide can be conjugated to another molecule, *e.g.*, a peptide, hybridization triggered cross-linking agent, transport agent, hybridization-triggered cleavage agent, etc.

5 The invention also includes molecular beacon nucleic acids having at least one region which is complementary to a nucleic acid of the invention, such that the molecular beacon is useful for quantitating the presence of the nucleic acid of the invention in a sample. A "molecular beacon" nucleic acid is a nucleic acid comprising a pair of complementary regions and having a fluorophore and a fluorescent quencher
10 associated therewith. The fluorophore and quencher are associated with different portions of the nucleic acid in such an orientation that when the complementary regions are annealed with one another, fluorescence of the fluorophore is quenched by the quencher. When the complementary regions of the nucleic acid are not annealed with one another, fluorescence of the fluorophore is quenched to a lesser degree. Molecular
15 beacon nucleic acids are described, for example, in U.S. Patent 5,876,930.

II. Isolated Proteins and Antibodies

One aspect of the invention pertains to isolated proteins which correspond to individual markers of the invention, and biologically active portions thereof, as well as
20 polypeptide fragments suitable for use as immunogens to raise antibodies directed against a polypeptide corresponding to a marker of the invention. In one embodiment, the native polypeptide corresponding to a marker can be isolated from cells or tissue sources by an appropriate purification scheme using standard protein purification techniques. In another embodiment, polypeptides corresponding to a marker of the
25 invention are produced by recombinant DNA techniques. Alternative to recombinant expression, a polypeptide corresponding to a marker of the invention can be synthesized chemically using standard peptide synthesis techniques.

An "isolated" or "purified" protein or biologically active portion thereof is substantially free of cellular material or other contaminating proteins from the cell or
30 tissue source from which the protein is derived, or substantially free of chemical precursors or other chemicals when chemically synthesized. The language "substantially free of cellular material" includes preparations of protein in which the

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protein is separated from cellular components of the cells from which it is isolated or recombinantly produced. Thus, protein that is substantially free of cellular material includes preparations of protein having less than about 30%, 20%, 10%, or 5% (by dry weight) of heterologous protein (also referred to herein as a "contaminating protein").

- 5 When the protein or biologically active portion thereof is recombinantly produced, it is also preferably substantially free of culture medium, *i.e.*, culture medium represents less than about 20%, 10%, or 5% of the volume of the protein preparation. When the protein is produced by chemical synthesis, it is preferably substantially free of chemical precursors or other chemicals, *i.e.*, it is separated from chemical precursors or other
- 10 chemicals which are involved in the synthesis of the protein. Accordingly such preparations of the protein have less than about 30%, 20%, 10%, 5% (by dry weight) of chemical precursors or compounds other than the polypeptide of interest.

- Biologically active portions of a polypeptide corresponding to a marker of the invention include polypeptides comprising amino acid sequences sufficiently identical to
- 15 or derived from the amino acid sequence of the protein corresponding to the marker (*e.g.*, the amino acid sequence listed in the GenBank and IMAGE Consortium database records described herein), which include fewer amino acids than the full length protein, and exhibit at least one activity of the corresponding full-length protein. Typically, biologically active portions comprise a domain or motif with at least one activity of the
- 20 corresponding protein. A biologically active portion of a protein of the invention can be a polypeptide which is, for example, 10, 25, 50, 100 or more amino acids in length. Moreover, other biologically active portions, in which other regions of the protein are deleted, can be prepared by recombinant techniques and evaluated for one or more of the functional activities of the native form of a polypeptide of the invention.

- 25 Preferred polypeptides have the amino acid sequence listed in the one of the GenBank and IMAGE Consortium database records described herein. Other useful proteins are substantially identical (*e.g.*, at least about 40%, preferably 50%, 60%, 70%, 80%, 90%, 95%, or 99%) to one of these sequences and retain the functional activity of the protein of the corresponding naturally-occurring protein yet differ in amino acid
- 30 sequence due to natural allelic variation or mutagenesis.

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To determine the percent identity of two amino acid sequences or of two nucleic acids, the sequences are aligned for optimal comparison purposes (*e.g.*, gaps can be introduced in the sequence of a first amino acid or nucleic acid sequence for optimal alignment with a second amino or nucleic acid sequence). The amino acid residues or nucleotides at corresponding amino acid positions or nucleotide positions are then compared. When a position in the first sequence is occupied by the same amino acid residue or nucleotide as the corresponding position in the second sequence, then the molecules are identical at that position. The percent identity between the two sequences is a function of the number of identical positions shared by the sequences (*i.e.*, % identity = # of identical positions/total # of positions (*e.g.*, overlapping positions) x100). In one embodiment the two sequences are the same length.

The determination of percent identity between two sequences can be accomplished using a mathematical algorithm. A preferred, non-limiting example of a mathematical algorithm utilized for the comparison of two sequences is the algorithm of Karlin and Altschul (1990) *Proc. Natl. Acad. Sci. USA* 87:2264-2268, modified as in Karlin and Altschul (1993) *Proc. Natl. Acad. Sci. USA* 90:5873-5877. Such an algorithm is incorporated into the NBLAST and XBLAST programs of Altschul, *et al.* (1990) *J. Mol. Biol.* 215:403-410. BLAST nucleotide searches can be performed with the NBLAST program, score = 100, wordlength = 12 to obtain nucleotide sequences homologous to a nucleic acid molecules of the invention. BLAST protein searches can be performed with the XBLAST program, score = 50, wordlength = 3 to obtain amino acid sequences homologous to a protein molecules of the invention. To obtain gapped alignments for comparison purposes, Gapped BLAST can be utilized as described in Altschul *et al.* (1997) *Nucleic Acids Res.* 25:3389-3402. Alternatively, PSI-Blast can be used to perform an iterated search which detects distant relationships between molecules. When utilizing BLAST, Gapped BLAST, and PSI-Blast programs, the default parameters of the respective programs (*e.g.*, XBLAST and NBLAST) can be used. See <http://www.ncbi.nlm.nih.gov>. Another preferred, non-limiting example of a mathematical algorithm utilized for the comparison of sequences is the algorithm of Myers and Miller, (1988) *CABIOS* 4:11-17. Such an algorithm is incorporated into the ALIGN program (version 2.0) which is part of the GCG sequence alignment software package. When utilizing the ALIGN program for comparing amino acid sequences, a

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PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4 can be used. Yet another useful algorithm for identifying regions of local sequence similarity and alignment is the FASTA algorithm as described in Pearson and Lipman (1988) *Proc. Natl. Acad. Sci. USA* 85:2444-2448. When using the FASTA algorithm for
5 comparing nucleotide or amino acid sequences, a PAM120 weight residue table can, for example, be used with a *k*-tuple value of 2.

The percent identity between two sequences can be determined using techniques similar to those described above, with or without allowing gaps. In calculating percent identity, only exact matches are counted.

- 10 The invention also provides chimeric or fusion proteins corresponding to a marker of the invention. As used herein, a "chimeric protein" or "fusion protein" comprises all or part (preferably a biologically active part) of a polypeptide corresponding to a marker of the invention operably linked to a heterologous polypeptide (*i.e.*, a polypeptide other than the polypeptide corresponding to the marker).
15 Within the fusion protein, the term "operably linked" is intended to indicate that the polypeptide of the invention and the heterologous polypeptide are fused in-frame to each other. The heterologous polypeptide can be fused to the amino-terminus or the carboxyl-terminus of the polypeptide of the invention.

- One useful fusion protein is a GST fusion protein in which a polypeptide
20 corresponding to a marker of the invention is fused to the carboxyl terminus of GST sequences. Such fusion proteins can facilitate the purification of a recombinant polypeptide of the invention.

- In another embodiment, the fusion protein contains a heterologous signal sequence at its amino terminus. For example, the native signal sequence of a
25 polypeptide corresponding to a marker of the invention can be removed and replaced with a signal sequence from another protein. For example, the gp67 secretory sequence of the baculovirus envelope protein can be used as a heterologous signal sequence (Ausubel *et al.*, ed., *Current Protocols in Molecular Biology*, John Wiley & Sons, NY, 1992). Other examples of eukaryotic heterologous signal sequences include the
30 secretory sequences of melittin and human placental alkaline phosphatase (Stratagene; La Jolla, California). In yet another example, useful prokaryotic heterologous signal

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sequences include the *phoA* secretory signal (Sambrook *et al.*, *supra*) and the protein A secretory signal (Pharmacia Biotech; Piscataway, New Jersey).

In yet another embodiment, the fusion protein is an immunoglobulin fusion protein in which all or part of a polypeptide corresponding to a marker of the invention is fused to sequences derived from a member of the immunoglobulin protein family. The immunoglobulin fusion proteins of the invention can be incorporated into pharmaceutical compositions and administered to a subject to inhibit an interaction between a ligand (soluble or membrane-bound) and a protein on the surface of a cell (receptor), to thereby suppress signal transduction *in vivo*. The immunoglobulin fusion protein can be used to affect the bioavailability of a cognate ligand of a polypeptide of the invention. Inhibition of ligand/receptor interaction can be useful therapeutically, both for treating proliferative and differentiative disorders and for modulating (*e.g.* promoting or inhibiting) cell survival. Moreover, the immunoglobulin fusion proteins of the invention can be used as immunogens to produce antibodies directed against a polypeptide of the invention in a subject, to purify ligands and in screening assays to identify molecules which inhibit the interaction of receptors with ligands.

Chimeric and fusion proteins of the invention can be produced by standard recombinant DNA techniques. In another embodiment, the fusion gene can be synthesized by conventional techniques including automated DNA synthesizers. Alternatively, PCR amplification of gene fragments can be carried out using anchor primers which give rise to complementary overhangs between two consecutive gene fragments which can subsequently be annealed and re-amplified to generate a chimeric gene sequence (see, *e.g.*, Ausubel *et al.*, *supra*). Moreover, many expression vectors are commercially available that already encode a fusion moiety (*e.g.*, a GST polypeptide). A nucleic acid encoding a polypeptide of the invention can be cloned into such an expression vector such that the fusion moiety is linked in-frame to the polypeptide of the invention.

A signal sequence can be used to facilitate secretion and isolation of the secreted protein or other proteins of interest. Signal sequences are typically characterized by a core of hydrophobic amino acids which are generally cleaved from the mature protein during secretion in one or more cleavage events. Such signal peptides contain processing sites that allow cleavage of the signal sequence from the mature proteins as

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they pass through the secretory pathway. Thus, the invention pertains to the described polypeptides having a signal sequence, as well as to polypeptides from which the signal sequence has been proteolytically cleaved (*i.e.*, the cleavage products). In one embodiment, a nucleic acid sequence encoding a signal sequence can be operably linked
5 in an expression vector to a protein of interest, such as a protein which is ordinarily not secreted or is otherwise difficult to isolate. The signal sequence directs secretion of the protein, such as from a eukaryotic host into which the expression vector is transformed, and the signal sequence is subsequently or concurrently cleaved. The protein can then be readily purified from the extracellular medium by art recognized methods.
10 Alternatively, the signal sequence can be linked to the protein of interest using a sequence which facilitates purification, such as with a GST domain.

The present invention also pertains to variants of the polypeptides corresponding to individual markers of the invention. Such variants have an altered amino acid sequence which can function as either agonists (mimetics) or as antagonists. Variants
15 can be generated by mutagenesis, *e.g.*, discrete point mutation or truncation. An agonist can retain substantially the same, or a subset, of the biological activities of the naturally occurring form of the protein. An antagonist of a protein can inhibit one or more of the activities of the naturally occurring form of the protein by, for example, competitively binding to a downstream or upstream member of a cellular signaling cascade which
20 includes the protein of interest. Thus, specific biological effects can be elicited by treatment with a variant of limited function. Treatment of a subject with a variant having a subset of the biological activities of the naturally occurring form of the protein can have fewer side effects in a subject relative to treatment with the naturally occurring form of the protein.

25 Variants of a protein of the invention which function as either agonists (mimetics) or as antagonists can be identified by screening combinatorial libraries of mutants, *e.g.*, truncation mutants, of the protein of the invention for agonist or antagonist activity. In one embodiment, a variegated library of variants is generated by combinatorial mutagenesis at the nucleic acid level and is encoded by a variegated gene
30 library. A variegated library of variants can be produced by, for example, enzymatically ligating a mixture of synthetic oligonucleotides into gene sequences such that a degenerate set of potential protein sequences is expressible as individual polypeptides,

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or alternatively, as a set of larger fusion proteins (e.g., for phage display). There are a variety of methods which can be used to produce libraries of potential variants of the polypeptides of the invention from a degenerate oligonucleotide sequence. Methods for synthesizing degenerate oligonucleotides are known in the art (see, e.g., Narang, 1983, 5 *Tetrahedron* 39:3; Itakura *et al.*, 1984, *Annu. Rev. Biochem.* 53:323; Itakura *et al.*, 1984, *Science* 198:1056; Ike *et al.*, 1983 *Nucleic Acid Res.* 11:477).

In addition, libraries of fragments of the coding sequence of a polypeptide corresponding to a marker of the invention can be used to generate a variegated population of polypeptides for screening and subsequent selection of variants. For 10 example, a library of coding sequence fragments can be generated by treating a double stranded PCR fragment of the coding sequence of interest with a nuclease under conditions wherein nicking occurs only about once per molecule, denaturing the double stranded DNA, renaturing the DNA to form double stranded DNA which can include sense/antisense pairs from different nicked products, removing single stranded portions 15 from reformed duplexes by treatment with S1 nuclease, and ligating the resulting fragment library into an expression vector. By this method, an expression library can be derived which encodes amino terminal and internal fragments of various sizes of the protein of interest.

Several techniques are known in the art for screening gene products of 20 combinatorial libraries made by point mutations or truncation, and for screening cDNA libraries for gene products having a selected property. The most widely used techniques, which are amenable to high through-put analysis, for screening large gene libraries typically include cloning the gene library into replicable expression vectors, transforming appropriate cells with the resulting library of vectors, and expressing the 25 combinatorial genes under conditions in which detection of a desired activity facilitates isolation of the vector encoding the gene whose product was detected. Recursive ensemble mutagenesis (REM), a technique which enhances the frequency of functional mutants in the libraries, can be used in combination with the screening assays to identify variants of a protein of the invention (Arkin and Yourvan, 1992, *Proc. Natl. Acad. Sci.* 30 *USA* 89:7811-7815; Delgrave *et al.*, 1993, *Protein Engineering* 6(3):327-331).

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An isolated polypeptide corresponding to a marker of the invention, or a fragment thereof, can be used as an immunogen to generate antibodies using standard techniques for polyclonal and monoclonal antibody preparation. The full-length polypeptide or protein can be used or, alternatively, the invention provides antigenic peptide fragments for use as immunogens. The antigenic peptide of a protein of the invention comprises at least 8 (preferably 10, 15, 20, or 30 or more) amino acid residues of the amino acid sequence of one of the polypeptides of the invention, and encompasses an epitope of the protein such that an antibody raised against the peptide forms a specific immune complex with a marker of the invention to which the protein corresponds.

10 Preferred epitopes encompassed by the antigenic peptide are regions that are located on the surface of the protein, *e.g.*, hydrophilic regions. Hydrophobicity sequence analysis, hydrophilicity sequence analysis, or similar analyses can be used to identify hydrophilic regions.

An immunogen typically is used to prepare antibodies by immunizing a suitable (i.e. immunocompetent) subject such as a rabbit, goat, mouse, or other mammal or vertebrate. An appropriate immunogenic preparation can contain, for example, recombinantly-expressed or chemically-synthesized polypeptide. The preparation can further include an adjuvant, such as Freund's complete or incomplete adjuvant, or a similar immunostimulatory agent.

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Accordingly, another aspect of the invention pertains to antibodies directed against a polypeptide of the invention. The terms "antibody" and "antibody substance" as used interchangeably herein refer to immunoglobulin molecules and immunologically active portions of immunoglobulin molecules, *i.e.*, molecules that contain an antigen binding site which specifically binds an antigen, such as a polypeptide of the invention, *e.g.*, an epitope of a polypeptide of the invention. A molecule which specifically binds to a given polypeptide of the invention is a molecule which binds the polypeptide, but does not substantially bind other molecules in a sample, *e.g.*, a biological sample, which naturally contains the polypeptide. Examples of immunologically active portions of immunoglobulin molecules include F(ab) and F(ab')₂ fragments which can be generated by treating the antibody with an enzyme such as pepsin. The invention provides polyclonal and monoclonal antibodies. The term "monoclonal antibody" or "monoclonal antibody composition", as used herein, refers to a population of antibody

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molecules that contain only one species of an antigen binding site capable of immunoreacting with a particular epitope.

Polyclonal antibodies can be prepared as described above by immunizing a suitable subject with a polypeptide of the invention as an immunogen. Preferred polyclonal antibody compositions are ones that have been selected for antibodies directed against a polypeptide or polypeptides of the invention. Particularly preferred polyclonal antibody preparations are ones that contain only antibodies directed against a polypeptide or polypeptides of the invention. Particularly preferred immunogen compositions are those that contain no other human proteins such as, for example, immunogen compositions made using a non-human host cell for recombinant expression of a polypeptide of the invention. In such a manner, the only human epitope or epitopes recognized by the resulting antibody compositions raised against this immunogen will be present as part of a polypeptide or polypeptides of the invention.

The antibody titer in the immunized subject can be monitored over time by standard techniques, such as with an enzyme linked immunosorbent assay (ELISA) using immobilized polypeptide. If desired, the antibody molecules can be harvested or isolated from the subject (*e.g.*, from the blood or serum of the subject) and further purified by well-known techniques, such as protein A chromatography to obtain the IgG fraction. Alternatively, antibodies specific for a protein or polypeptide of the invention can be selected or (*e.g.*, partially purified) or purified by, *e.g.*, affinity chromatography. For example, a recombinantly expressed and purified (or partially purified) protein of the invention is produced as described herein, and covalently or non-covalently coupled to a solid support such as, for example, a chromatography column. The column can then be used to affinity purify antibodies specific for the proteins of the invention from a sample containing antibodies directed against a large number of different epitopes, thereby generating a substantially purified antibody composition, *i.e.*, one that is substantially free of contaminating antibodies. By a substantially purified antibody composition is meant, in this context, that the antibody sample contains at most only 30% (by dry weight) of contaminating antibodies directed against epitopes other than those of the desired protein or polypeptide of the invention, and preferably at most 20%, yet more preferably at most 10%, and most preferably at most 5% (by dry weight) of the sample is contaminating antibodies. A purified antibody composition means that at least

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99% of the antibodies in the composition are directed against the desired protein or polypeptide of the invention.

At an appropriate time after immunization, *e.g.*, when the specific antibody titers are highest, antibody-producing cells can be obtained from the subject and used to
5 prepare monoclonal antibodies by standard techniques, such as the hybridoma technique originally described by Kohler and Milstein (1975) *Nature* 256:495-497, the human B cell hybridoma technique (see Kozbor *et al.*, 1983, *Immunol. Today* 4:72), the EBV-hybridoma technique (see Cole *et al.*, pp. 77-96 In *Monoclonal Antibodies and Cancer Therapy*, Alan R. Liss, Inc., 1985) or trioma techniques. The technology for producing
10 hybridomas is well known (see generally *Current Protocols in Immunology*, Coligan *et al.* ed., John Wiley & Sons, New York, 1994). Hybridoma cells producing a monoclonal antibody of the invention are detected by screening the hybridoma culture supernatants for antibodies that bind the polypeptide of interest, *e.g.*, using a standard ELISA assay.

15 Alternative to preparing monoclonal antibody-secreting hybridomas, a monoclonal antibody directed against a polypeptide of the invention can be identified and isolated by screening a recombinant combinatorial immunoglobulin library (*e.g.*, an antibody phage display library) with the polypeptide of interest. Kits for generating and screening phage display libraries are commercially available (*e.g.*, the Pharmacia
20 *Recombinant Phage Antibody System*, Catalog No. 27-9400-01; and the Stratagene *SurfZAP Phage Display Kit*, Catalog No. 240612). Additionally, examples of methods and reagents particularly amenable for use in generating and screening antibody display library can be found in, for example, U.S. Patent No. 5,223,409; PCT Publication No. WO 92/18619; PCT Publication No. WO 91/17271; PCT Publication No. WO
25 92/20791; PCT Publication No. WO 92/15679; PCT Publication No. WO 93/01288; PCT Publication No. WO 92/01047; PCT Publication No. WO 92/09690; PCT Publication No. WO 90/02809; Fuchs *et al.* (1991) *Bio/Technology* 9:1370-1372; Hay *et al.* (1992) *Hum. Antibod. Hybridomas* 3:81-85; Huse *et al.* (1989) *Science* 246:1275-1281; Griffiths *et al.* (1993) *EMBO J.* 12:725-734.

30 Additionally, recombinant antibodies, such as chimeric and humanized monoclonal antibodies, comprising both human and non-human portions, which can be made using standard recombinant DNA techniques, are within the scope of the

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invention. A chimeric antibody is a molecule in which different portions are derived from different animal species, such as those having a variable region derived from a murine mAb and a human immunoglobulin constant region. (See, *e.g.*, Cabilly *et al.*, U.S. Patent No. 4,816,567, and Boss *et al.*, U.S. Patent No. 4,816,397, which are
5 incorporated herein by reference in their entirety.) Humanized antibodies are antibody molecules from non-human species having one or more complementarily determining regions (CDRs) from the non-human species and a framework region from a human immunoglobulin molecule. (See, *e.g.*, Queen, U.S. Patent No. 5,585,089, which is incorporated herein by reference in its entirety.) Such chimeric and humanized
10 monoclonal antibodies can be produced by recombinant DNA techniques known in the art, for example using methods described in PCT Publication No. WO 87/02671; European Patent Application 184,187; European Patent Application 171,496; European Patent Application 173,494; PCT Publication No. WO 86/01533; U.S. Patent No. 4,816,567; European Patent Application 125,023; Better *et al.* (1988) *Science* 240:1041-
15 1043; Liu *et al.* (1987) *Proc. Natl. Acad. Sci. USA* 84:3439-3443; Liu *et al.* (1987) *J. Immunol.* 139:3521-3526; Sun *et al.* (1987) *Proc. Natl. Acad. Sci. USA* 84:214-218; Nishimura *et al.* (1987) *Cancer Res.* 47:999-1005; Wood *et al.* (1985) *Nature* 314:446-449; and Shaw *et al.* (1988) *J. Natl. Cancer Inst.* 80:1553-1559; Morrison (1985) *Science* 229:1202-1207; Oi *et al.* (1986) *Bio/Techniques* 4:214; U.S. Patent 5,225,539;
20 Jones *et al.* (1986) *Nature* 321:552-525; Verhoeyan *et al.* (1988) *Science* 239:1534; and Beidler *et al.* (1988) *J. Immunol.* 141:4053-4060.

Antibodies of the invention may be used as therapeutic agents in treating cancers. In a preferred embodiment, completely human antibodies of the invention are used for therapeutic treatment of human cancer patients, particularly those having breast
25 cancer. Such antibodies can be produced, for example, using transgenic mice which are incapable of expressing endogenous immunoglobulin heavy and light chains genes, but which can express human heavy and light chain genes. The transgenic mice are immunized in the normal fashion with a selected antigen, *e.g.*, all or a portion of a polypeptide corresponding to a marker of the invention. Monoclonal antibodies directed
30 against the antigen can be obtained using conventional hybridoma technology. The human immunoglobulin transgenes harbored by the transgenic mice rearrange during B cell differentiation, and subsequently undergo class switching and somatic mutation.

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Thus, using such a technique, it is possible to produce therapeutically useful IgG, IgA and IgE antibodies. For an overview of this technology for producing human antibodies, see Lonberg and Huszar (1995) *Int. Rev. Immunol.* 13:65-93). For a detailed discussion of this technology for producing human antibodies and human monoclonal antibodies and protocols for producing such antibodies, see, *e.g.*, U.S. Patent 5,625,126; U.S. Patent 5,633,425; U.S. Patent 5,569,825; U.S. Patent 5,661,016; and U.S. Patent 5,545,806. In addition, companies such as Abgenix, Inc. (Freemont, CA), can be engaged to provide human antibodies directed against a selected antigen using technology similar to that described above.

10 Completely human antibodies which recognize a selected epitope can be generated using a technique referred to as "guided selection." In this approach a selected non-human monoclonal antibody, *e.g.*, a murine antibody, is used to guide the selection of a completely human antibody recognizing the same epitope (Jespers *et al.*, 1994, *Bio/technology* 12:899-903).

15 An antibody directed against a polypeptide corresponding to a marker of the invention (*e.g.*, a monoclonal antibody) can be used to isolate the polypeptide by standard techniques, such as affinity chromatography or immunoprecipitation. Moreover, such an antibody can be used to detect the marker (*e.g.*, in a cellular lysate or cell supernatant) in order to evaluate the level and pattern of expression of the marker.

20 The antibodies can also be used diagnostically to monitor protein levels in tissues or body fluids (*e.g.* in an ovary-associated body fluid) as part of a clinical testing procedure, *e.g.*, to, for example, determine the efficacy of a given treatment regimen. Detection can be facilitated by coupling the antibody to a detectable substance. Examples of detectable substances include various enzymes, prosthetic groups,

25 fluorescent materials, luminescent materials, bioluminescent materials, and radioactive materials. Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, β -galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate,

30 rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent

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materials include luciferase, luciferin, and aequorin, and examples of suitable radioactive material include ^{125}I , ^{131}I , ^{35}S or ^3H .

Further, an antibody (or fragment thereof) can be conjugated to a therapeutic moiety such as a cytotoxin, a therapeutic agent or a radioactive metal ion. A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include taxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, tenoposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin, dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (*e.g.*, methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (*e.g.*, mechlorethamine, thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclophosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis-dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (*e.g.*, daunorubicin (formerly daunomycin) and doxorubicin), antibiotics (*e.g.*, dactinomycin (formerly actinomycin), bleomycin, mithramycin, and anthramycin (AMC)), and anti-mitotic agents (*e.g.*, vincristine and vinblastine).

The conjugates of the invention can be used for modifying a given biological response, the drug moiety is not to be construed as limited to classical chemical therapeutic agents. For example, the drug moiety may be a protein or polypeptide possessing a desired biological activity. Such proteins may include, for example, a toxin such as abrin, ricin A, pseudomonas exotoxin, or diphtheria toxin; a protein such as tumor necrosis factor, α -interferon, β -interferon, nerve growth factor, platelet derived growth factor, tissue plasminogen activator; or, biological response modifiers such as, for example, lymphokines, interleukin-1 ("IL-1"), interleukin-2 ("IL-2"), interleukin-6 ("IL-6"), granulocyte macrophage colony stimulating factor ("GM-CSF"), granulocyte colony stimulating factor ("G-CSF"), or other growth factors.

Techniques for conjugating such therapeutic moiety to antibodies are well known, see, *e.g.*, Arnon et al., "Monoclonal Antibodies For Immunotargeting Of Drugs In Cancer Therapy", in *Monoclonal Antibodies And Cancer Therapy*, Reisfeld et al. (eds.), pp. 243-56 (Alan R. Liss, Inc. 1985); Hellstrom et al., "Antibodies For Drug

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- Delivery", in Controlled Drug Delivery (2nd Ed.), Robinson et al. (eds.), pp. 623-53 (Marcel Dekker, Inc. 1987); Thorpe, "Antibody Carriers Of Cytotoxic Agents In Cancer Therapy: A Review", in Monoclonal Antibodies '84: Biological And Clinical Applications, Pinchera et al. (eds.), pp. 475-506 (1985); "Analysis, Results, And Future Prospective Of The Therapeutic Use Of Radiolabeled Antibody In Cancer Therapy", in Monoclonal Antibodies For Cancer Detection And Therapy, Baldwin et al. (eds.), pp. 303-16 (Academic Press 1985), and Thorpe et al., "The Preparation And Cytotoxic Properties Of Antibody-Toxin Conjugates", Immunol. Rev., 62:119-58 (1982).

Alternatively, an antibody can be conjugated to a second antibody to form an antibody heteroconjugate as described by Segal in U.S. Patent No. 4,676,980.

Accordingly, in one aspect, the invention provides substantially purified antibodies or fragments thereof, and non-human antibodies or fragments thereof, which antibodies or fragments specifically bind to a polypeptide comprising an amino acid sequence selected from the group consisting of the amino acid sequences of the present invention, an amino acid sequence encoded by the cDNA of the present invention, a fragment of at least 15 amino acid residues of an amino acid sequence of the present invention, an amino acid sequence which is at least 95% identical to the amino acid sequence of the present invention (wherein the percent identity is determined using the ALIGN program of the GCG software package with a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4) and an amino acid sequence which is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule consisting of the nucleic acid molecules of the present invention, or a complement thereof, under conditions of hybridization of 6X SSC at 45°C and washing in 0.2 X SSC, 0.1% SDS at 65°C. In various embodiments, the substantially purified antibodies of the invention, or fragments thereof, can be human, non-human, chimeric and/or humanized antibodies.

In another aspect, the invention provides non-human antibodies or fragments thereof, which antibodies or fragments specifically bind to a polypeptide comprising an amino acid sequence selected from the group consisting of: the amino acid sequence of the present invention, an amino acid sequence encoded by the cDNA of the present invention, a fragment of at least 15 amino acid residues of the amino acid sequence of the present invention, an amino acid sequence which is at least 95% identical to the

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amino acid sequence of the present invention (wherein the percent identity is determined using the ALIGN program of the GCG software package with a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4) and an amino acid sequence which is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule consisting of the nucleic acid molecules of the present invention, or a complement thereof, under conditions of hybridization of 6X SSC at 45°C and washing in 0.2 X SSC, 0.1% SDS at 65°C. Such non-human antibodies can be goat, mouse, sheep, horse, chicken, rabbit, or rat antibodies. Alternatively, the non-human antibodies of the invention can be chimeric and/or humanized antibodies. In addition, the non-human antibodies of the invention can be polyclonal antibodies or monoclonal antibodies.

In still a further aspect, the invention provides monoclonal antibodies or fragments thereof, which antibodies or fragments specifically bind to a polypeptide comprising an amino acid sequence selected from the group consisting of the amino acid sequences of the present invention, an amino acid sequence encoded by the cDNA of the present invention, a fragment of at least 15 amino acid residues of an amino acid sequence of the present invention, an amino acid sequence which is at least 95% identical to an amino acid sequence of the present invention (wherein the percent identity is determined using the ALIGN program of the GCG software package with a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4) and an amino acid sequence which is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule consisting of the nucleic acid molecules of the present invention, or a complement thereof, under conditions of hybridization of 6X SSC at 45°C and washing in 0.2 X SSC, 0.1% SDS at 65°C. The monoclonal antibodies can be human, humanized, chimeric and/or non-human antibodies.

The substantially purified antibodies or fragments thereof may specifically bind to a signal peptide, a secreted sequence, an extracellular domain, a transmembrane or a cytoplasmic domain or cytoplasmic membrane of a polypeptide of the invention. In a particularly preferred embodiment, the substantially purified antibodies or fragments thereof, the non-human antibodies or fragments thereof, and/or the monoclonal antibodies or fragments thereof, of the invention specifically bind to a secreted sequence or an extracellular domain of the amino acid sequences of the present invention.

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Any of the antibodies of the invention can be conjugated to a therapeutic moiety or to a detectable substance. Non-limiting examples of detectable substances that can be conjugated to the antibodies of the invention are an enzyme, a prosthetic group, a fluorescent material, a luminescent material, a bioluminescent material, and a
5 radioactive material.

The invention also provides a kit containing an antibody of the invention conjugated to a detectable substance, and instructions for use. Still another aspect of the invention is a pharmaceutical composition comprising an antibody of the invention and a pharmaceutically acceptable carrier. In preferred embodiments, the pharmaceutical
10 composition contains an antibody of the invention, a therapeutic moiety, and a pharmaceutically acceptable carrier.

Still another aspect of the invention is a method of making an antibody that specifically recognizes a polypeptide of the present invention, the method comprising immunizing a mammal with a polypeptide. The polypeptide used as an immungen
15 comprises an amino acid sequence selected from the group consisting of the amino acid sequence of the present invention, an amino acid sequence encoded by the cDNA of the nucleic acid molecules of the present invention, a fragment of at least 15 amino acid residues of the amino acid sequence of the present invention, an amino acid sequence which is at least 95% identical to the amino acid sequence of the present invention
20 (wherein the percent identity is determined using the ALIGN program of the GCG software package with a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4) and an amino acid sequence which is encoded by a nucleic acid molecule which hybridizes to a nucleic acid molecule consisting of the nucleic acid molecules of the present invention, or a complement thereof, under conditions of
25 hybridization of 6X SSC at 45°C and washing in 0.2 X SSC, 0.1% SDS at 65°C.

After immunization, a sample is collected from the mammal that contains an antibody that specifically recognizes the polypeptide. Preferably, the polypeptide is recombinantly produced using a non-human host cell. Optionally, the antibodies can be further purified from the sample using techniques well known to those of skill in the art.
30 The method can further comprise producing a monoclonal antibody-producing cell from the cells of the mammal. Optionally, antibodies are collected from the antibody-producing cell.

III. Recombinant Expression Vectors and Host Cells

Another aspect of the invention pertains to vectors, preferably expression vectors, containing a nucleic acid encoding a polypeptide corresponding to a marker of the invention (or a portion of such a polypeptide). As used herein, the term "vector" refers to a nucleic acid molecule capable of transporting another nucleic acid to which it has been linked. One type of vector is a "plasmid", which refers to a circular double stranded DNA loop into which additional DNA segments can be ligated. Another type of vector is a viral vector, wherein additional DNA segments can be ligated into the viral genome. Certain vectors are capable of autonomous replication in a host cell into which they are introduced (*e.g.*, bacterial vectors having a bacterial origin of replication and episomal mammalian vectors). Other vectors (*e.g.*, non-episomal mammalian vectors) are integrated into the genome of a host cell upon introduction into the host cell, and thereby are replicated along with the host genome. Moreover, certain vectors, namely expression vectors, are capable of directing the expression of genes to which they are operably linked. In general, expression vectors of utility in recombinant DNA techniques are often in the form of plasmids (vectors). However, the invention is intended to include such other forms of expression vectors, such as viral vectors (*e.g.*, replication defective retroviruses, adenoviruses and adeno-associated viruses), which serve equivalent functions.

The recombinant expression vectors of the invention comprise a nucleic acid of the invention in a form suitable for expression of the nucleic acid in a host cell. This means that the recombinant expression vectors include one or more regulatory sequences, selected on the basis of the host cells to be used for expression, which is operably linked to the nucleic acid sequence to be expressed. Within a recombinant expression vector, "operably linked" is intended to mean that the nucleotide sequence of interest is linked to the regulatory sequence(s) in a manner which allows for expression of the nucleotide sequence (*e.g.*, in an *in vitro* transcription/translation system or in a host cell when the vector is introduced into the host cell). The term "regulatory sequence" is intended to include promoters, enhancers and other expression control elements (*e.g.*, polyadenylation signals). Such regulatory sequences are described, for example, in Goeddel, *Methods in Enzymology: Gene Expression Technology* vol. 185,

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Academic Press, San Diego, CA (1991). Regulatory sequences include those which direct constitutive expression of a nucleotide sequence in many types of host cell and those which direct expression of the nucleotide sequence only in certain host cells (e.g., tissue-specific regulatory sequences). It will be appreciated by those skilled in the art that the design of the expression vector can depend on such factors as the choice of the host cell to be transformed, the level of expression of protein desired, and the like. The expression vectors of the invention can be introduced into host cells to thereby produce proteins or peptides, including fusion proteins or peptides, encoded by nucleic acids as described herein.

10 The recombinant expression vectors of the invention can be designed for expression of a polypeptide corresponding to a marker of the invention in prokaryotic (e.g., *E. coli*) or eukaryotic cells (e.g., insect cells {using baculovirus expression vectors}, yeast cells or mammalian cells). Suitable host cells are discussed further in Goeddel, *supra*. Alternatively, the recombinant expression vector can be transcribed and translated *in vitro*, for example using T7 promoter regulatory sequences and T7 polymerase.

Expression of proteins in prokaryotes is most often carried out in *E. coli* with vectors containing constitutive or inducible promoters directing the expression of either fusion or non-fusion proteins. Fusion vectors add a number of amino acids to a protein encoded therein, usually to the amino terminus of the recombinant protein. Such fusion vectors typically serve three purposes: 1) to increase expression of recombinant protein; 2) to increase the solubility of the recombinant protein; and 3) to aid in the purification of the recombinant protein by acting as a ligand in affinity purification. Often, in fusion expression vectors, a proteolytic cleavage site is introduced at the junction of the fusion moiety and the recombinant protein to enable separation of the recombinant protein from the fusion moiety subsequent to purification of the fusion protein. Such enzymes, and their cognate recognition sequences, include Factor Xa, thrombin and enterokinase. Typical fusion expression vectors include pGEX (Pharmacia Biotech Inc; Smith and Johnson, 1988, *Gene* 67:31-40), pMAL (New England Biolabs, Beverly, MA) and pRIT5 (Pharmacia, Piscataway, NJ) which fuse glutathione S-transferase (GST), maltose E binding protein, or protein A, respectively, to the target recombinant protein.

Examples of suitable inducible non-fusion *E. coli* expression vectors include pTrc (Amann *et al.*, 1988, *Gene* 69:301-315) and pET 11d (Studier *et al.*, p. 60-89, In *Gene Expression Technology: Methods in Enzymology* vol.185, Academic Press, San Diego, CA, 1991). Target gene expression from the pTrc vector relies on host RNA
5 polymerase transcription from a hybrid trp-lac fusion promoter. Target gene expression from the pET 11d vector relies on transcription from a T7 gn10-lac fusion promoter mediated by a co-expressed viral RNA polymerase (T7 gn1). This viral polymerase is supplied by host strains BL21(DE3) or HMS174(DE3) from a resident prophage harboring a T7 gn1 gene under the transcriptional control of the lacUV 5 promoter.

10 One strategy to maximize recombinant protein expression in *E. coli* is to express the protein in a host bacteria with an impaired capacity to proteolytically cleave the recombinant protein (Gottesman, p. 119-128, In *Gene Expression Technology: Methods in Enzymology* vol. 185, Academic Press, San Diego, CA, 1990. Another strategy is to alter the nucleic acid sequence of the nucleic acid to be inserted into an expression
15 vector so that the individual codons for each amino acid are those preferentially utilized in *E. coli* (Wada *et al.*, 1992, *Nucleic Acids Res.* 20:2111-2118). Such alteration of nucleic acid sequences of the invention can be carried out by standard DNA synthesis techniques.

In another embodiment, the expression vector is a yeast expression vector.
20 Examples of vectors for expression in yeast *S. cerevisiae* include pYepSec1 (Baldari *et al.*, 1987, *EMBO J.* 6:229-234), pMFa (Kurjan and Herskowitz, 1982, *Cell* 30:933-943), pJRY88 (Schultz *et al.*, 1987, *Gene* 54:113-123), pYES2 (Invitrogen Corporation, San Diego, CA), and pPicZ (Invitrogen Corp, San Diego, CA).

Alternatively, the expression vector is a baculovirus expression vector.
25 Baculovirus vectors available for expression of proteins in cultured insect cells (*e.g.*, Sf 9 cells) include the pAc series (Smith *et al.*, 1983, *Mol. Cell Biol.* 3:2156-2165) and the pVL series (Lucklow and Summers, 1989, *Virology* 170:31-39).

In yet another embodiment, a nucleic acid of the invention is expressed in mammalian cells using a mammalian expression vector. Examples of mammalian
30 expression vectors include pCDM8 (Seed, 1987, *Nature* 329:840) and pMT2PC (Kaufman *et al.*, 1987, *EMBO J.* 6:187-195). When used in mammalian cells, the expression vector's control functions are often provided by viral regulatory elements.

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For example, commonly used promoters are derived from polyoma, Adenovirus 2, cytomegalovirus and Simian Virus 40. For other suitable expression systems for both prokaryotic and eukaryotic cells see chapters 16 and 17 of Sambrook *et al.*, *supra*.

In another embodiment, the recombinant mammalian expression vector is
5 capable of directing expression of the nucleic acid preferentially in a particular cell type (e.g., tissue-specific regulatory elements are used to express the nucleic acid). Tissue-specific regulatory elements are known in the art. Non-limiting examples of suitable tissue-specific promoters include the albumin promoter (liver-specific; Pinkert *et al.*, 1987, *Genes Dev.* 1:268-277), lymphoid-specific promoters (Calame and Eaton, 1988,
10 *Adv. Immunol.* 43:235-275), in particular promoters of T cell receptors (Winoto and Baltimore, 1989, *EMBO J.* 8:729-733) and immunoglobulins (Banerji *et al.*, 1983, *Cell* 33:729-740; Queen and Baltimore, 1983, *Cell* 33:741-748), neuron-specific promoters (e.g., the neurofilament promoter; Byrne and Ruddle, 1989, *Proc. Natl. Acad. Sci. USA* 86:5473-5477), pancreas-specific promoters (Edlund *et al.*, 1985, *Science* 230:912-916),
15 and mammary gland-specific promoters (e.g., milk whey promoter; U.S. Patent No. 4,873,316 and European Application Publication No. 264,166). Developmentally-regulated promoters are also encompassed, for example the murine hox promoters (Kessel and Gruss, 1990, *Science* 249:374-379) and the α -fetoprotein promoter (Camper and Tilghman, 1989, *Genes Dev.* 3:537-546).

20 The invention further provides a recombinant expression vector comprising a DNA molecule of the invention cloned into the expression vector in an antisense orientation. That is, the DNA molecule is operably linked to a regulatory sequence in a manner which allows for expression (by transcription of the DNA molecule) of an RNA molecule which is antisense to the mRNA encoding a polypeptide of the invention.
25 Regulatory sequences operably linked to a nucleic acid cloned in the antisense orientation can be chosen which direct the continuous expression of the antisense RNA molecule in a variety of cell types, for instance viral promoters and/or enhancers, or regulatory sequences can be chosen which direct constitutive, tissue-specific or cell type specific expression of antisense RNA. The antisense expression vector can be in the
30 form of a recombinant plasmid, phagemid, or attenuated virus in which antisense nucleic acids are produced under the control of a high efficiency regulatory region, the activity of which can be determined by the cell type into which the vector is introduced. For a

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discussion of the regulation of gene expression using antisense genes see Weintraub *et al.*, 1986, *Trends in Genetics*, Vol. 1(1).

Another aspect of the invention pertains to host cells into which a recombinant expression vector of the invention has been introduced. The terms "host cell" and "recombinant host cell" are used interchangeably herein. It is understood that such terms refer not only to the particular subject cell but to the progeny or potential progeny of such a cell. Because certain modifications may occur in succeeding generations due to either mutation or environmental influences, such progeny may not, in fact, be identical to the parent cell, but are still included within the scope of the term as used herein.

A host cell can be any prokaryotic (*e.g.*, *E. coli*) or eukaryotic cell (*e.g.*, insect cells, yeast or mammalian cells).

Vector DNA can be introduced into prokaryotic or eukaryotic cells via conventional transformation or transfection techniques. As used herein, the terms "transformation" and "transfection" are intended to refer to a variety of art-recognized techniques for introducing foreign nucleic acid into a host cell, including calcium phosphate or calcium chloride co-precipitation, DEAE-dextran-mediated transfection, lipofection, or electroporation. Suitable methods for transforming or transfecting host cells can be found in Sambrook, *et al. (supra)*, and other laboratory manuals.

For stable transfection of mammalian cells, it is known that, depending upon the expression vector and transfection technique used, only a small fraction of cells may integrate the foreign DNA into their genome. In order to identify and select these integrants, a gene that encodes a selectable marker (*e.g.*, for resistance to antibiotics) is generally introduced into the host cells along with the gene of interest. Preferred selectable markers include those which confer resistance to drugs, such as G418, hygromycin and methotrexate. Cells stably transfected with the introduced nucleic acid can be identified by drug selection (*e.g.*, cells that have incorporated the selectable marker gene will survive, while the other cells die).

A host cell of the invention, such as a prokaryotic or eukaryotic host cell in culture, can be used to produce a polypeptide corresponding to a marker of the invention. Accordingly, the invention further provides methods for producing a polypeptide corresponding to a marker of the invention using the host cells of the

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invention. In one embodiment, the method comprises culturing the host cell of invention (into which a recombinant expression vector encoding a polypeptide of the invention has been introduced) in a suitable medium such that the marker is produced. In another embodiment, the method further comprises isolating the marker polypeptide
5 from the medium or the host cell.

The host cells of the invention can also be used to produce nonhuman transgenic animals. For example, in one embodiment, a host cell of the invention is a fertilized oocyte or an embryonic stem cell into which a sequences encoding a polypeptide corresponding to a marker of the invention have been introduced. Such host cells can
10 then be used to create non-human transgenic animals in which exogenous sequences encoding a marker protein of the invention have been introduced into their genome or homologous recombinant animals in which endogenous gene(s) encoding a polypeptide corresponding to a marker of the invention sequences have been altered. Such animals are useful for studying the function and/or activity of the polypeptide corresponding to
15 the marker and for identifying and/or evaluating modulators of polypeptide activity. As used herein, a "transgenic animal" is a non-human animal, preferably a mammal, more preferably a rodent such as a rat or mouse, in which one or more of the cells of the animal includes a transgene. Other examples of transgenic animals include non-human primates, sheep, dogs, cows, goats, chickens, amphibians, etc. A transgene is exogenous
20 DNA which is integrated into the genome of a cell from which a transgenic animal develops and which remains in the genome of the mature animal, thereby directing the expression of an encoded gene product in one or more cell types or tissues of the transgenic animal. As used herein, an "homologous recombinant animal" is a non-human animal, preferably a mammal, more preferably a mouse, in which an endogenous
25 gene has been altered by homologous recombination between the endogenous gene and an exogenous DNA molecule introduced into a cell of the animal, *e.g.*, an embryonic cell of the animal, prior to development of the animal.

A transgenic animal of the invention can be created by introducing a nucleic acid encoding a polypeptide corresponding to a marker of the invention into the male
30 pronuclei of a fertilized oocyte, *e.g.*, by microinjection, retroviral infection, and allowing the oocyte to develop in a pseudopregnant female foster animal. Intronic sequences and polyadenylation signals can also be included in the transgene to increase the efficiency

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of expression of the transgene. A tissue-specific regulatory sequence(s) can be operably linked to the transgene to direct expression of the polypeptide of the invention to particular cells. Methods for generating transgenic animals via embryo manipulation and microinjection, particularly animals such as mice, have become conventional in the art and are described, for example, in U.S. Patent Nos. 4,736,866 and 4,870,009, U.S. Patent No. 4,873,191 and in Hogan, *Manipulating the Mouse Embryo*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1986. Similar methods are used for production of other transgenic animals. A transgenic founder animal can be identified based upon the presence of the transgene in its genome and/or expression of mRNA encoding the transgene in tissues or cells of the animals. A transgenic founder animal can then be used to breed additional animals carrying the transgene. Moreover, transgenic animals carrying the transgene can further be bred to other transgenic animals carrying other transgenes.

To create an homologous recombinant animal, a vector is prepared which contains at least a portion of a gene encoding a polypeptide corresponding to a marker of the invention into which a deletion, addition or substitution has been introduced to thereby alter, *e.g.*, functionally disrupt, the gene. In a preferred embodiment, the vector is designed such that, upon homologous recombination, the endogenous gene is functionally disrupted (*i.e.*, no longer encodes a functional protein; also referred to as a "knock out" vector). Alternatively, the vector can be designed such that, upon homologous recombination, the endogenous gene is mutated or otherwise altered but still encodes functional protein (*e.g.*, the upstream regulatory region can be altered to thereby alter the expression of the endogenous protein). In the homologous recombination vector, the altered portion of the gene is flanked at its 5' and 3' ends by additional nucleic acid of the gene to allow for homologous recombination to occur between the exogenous gene carried by the vector and an endogenous gene in an embryonic stem cell. The additional flanking nucleic acid sequences are of sufficient length for successful homologous recombination with the endogenous gene. Typically, several kilobases of flanking DNA (both at the 5' and 3' ends) are included in the vector (see, *e.g.*, Thomas and Capecchi, 1987, *Cell* 51:503 for a description of homologous recombination vectors). The vector is introduced into an embryonic stem cell line (*e.g.*, by electroporation) and cells in which the introduced gene has homologously

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recombined with the endogenous gene are selected (see, *e.g.*, Li *et al.*, 1992, *Cell* 69:915). The selected cells are then injected into a blastocyst of an animal (*e.g.*, a mouse) to form aggregation chimeras (see, *e.g.*, Bradley, *Teratocarcinomas and Embryonic Stem Cells: A Practical Approach*, Robertson, Ed., IRL, Oxford, 1987, pp. 113-152). A chimeric embryo can then be implanted into a suitable pseudopregnant female foster animal and the embryo brought to term. Progeny harboring the homologously recombined DNA in their germ cells can be used to breed animals in which all cells of the animal contain the homologously recombined DNA by germline transmission of the transgene. Methods for constructing homologous recombination vectors and homologous recombinant animals are described further in Bradley (1991) *Current Opinion in Bio/Technology* 2:823-829 and in PCT Publication NOS. WO 90/11354, WO 91/01140, WO 92/0968, and WO 93/04169.

In another embodiment, transgenic non-human animals can be produced which contain selected systems which allow for regulated expression of the transgene. One example of such a system is the *cre/loxP* recombinase system of bacteriophage P1. For a description of the *cre/loxP* recombinase system, see, *e.g.*, Lakso *et al.* (1992) *Proc. Natl. Acad. Sci. USA* 89:6232-6236. Another example of a recombinase system is the FLP recombinase system of *Saccharomyces cerevisiae* (O'Gorman *et al.*, 1991, *Science* 251:1351-1355). If a *cre/loxP* recombinase system is used to regulate expression of the transgene, animals containing transgenes encoding both the *Cre* recombinase and a selected protein are required. Such animals can be provided through the construction of "double" transgenic animals, *e.g.*, by mating two transgenic animals, one containing a transgene encoding a selected protein and the other containing a transgene encoding a recombinase.

Clones of the non-human transgenic animals described herein can also be produced according to the methods described in Wilmut *et al.* (1997) *Nature* 385:810-813 and PCT Publication NOS. WO 97/07668 and WO 97/07669.

IV. Pharmaceutical Compositions

The nucleic acid molecules, polypeptides, and antibodies (also referred to herein as "active compounds") corresponding to a marker of the invention can be incorporated into pharmaceutical compositions suitable for administration. Such compositions

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typically comprise the nucleic acid molecule, protein, or antibody and a pharmaceutically acceptable carrier. As used herein the language "pharmaceutically acceptable carrier" is intended to include any and all solvents, dispersion media, coatings, antibacterial and antifungal agents, isotonic and absorption delaying agents, and the like, compatible with pharmaceutical administration. The use of such media and agents for pharmaceutically active substances is well known in the art. Except insofar as any conventional media or agent is incompatible with the active compound, use thereof in the compositions is contemplated. Supplementary active compounds can also be incorporated into the compositions.

10 The invention includes methods for preparing pharmaceutical compositions for modulating the expression or activity of a polypeptide or nucleic acid corresponding to a marker of the invention. Such methods comprise formulating a pharmaceutically acceptable carrier with an agent which modulates expression or activity of a polypeptide or nucleic acid corresponding to a marker of the invention. Such compositions can
15 further include additional active agents. Thus, the invention further includes methods for preparing a pharmaceutical composition by formulating a pharmaceutically acceptable carrier with an agent which modulates expression or activity of a polypeptide or nucleic acid corresponding to a marker of the invention and one or more additional active compounds.

20 The invention also provides methods (also referred to herein as "screening assays") for identifying modulators, *i.e.*, candidate or test compounds or agents (*e.g.*, peptides, peptidomimetics, peptoids, small molecules or other drugs) which (a) bind to the marker, or (b) have a modulatory (*e.g.*, stimulatory or inhibitory) effect on the activity of the marker or, more specifically, (c) have a modulatory effect on the
25 interactions of the marker with one or more of its natural substrates (*e.g.*, peptide, protein, hormone, co-factor, or nucleic acid), or (d) have a modulatory effect on the expression of the marker. Such assays typically comprise a reaction between the marker and one or more assay components. The other components may be either the test compound itself, or a combination of test compound and a natural binding partner of the
30 marker.

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The test compounds of the present invention may be obtained from any available source, including systematic libraries of natural and/or synthetic compounds. Test compounds may also be obtained by any of the numerous approaches in combinatorial library methods known in the art, including: biological libraries; peptoid libraries
5 (libraries of molecules having the functionalities of peptides, but with a novel, non-peptide backbone which are resistant to enzymatic degradation but which nevertheless remain bioactive; see, *e.g.*, Zuckermann *et al.*, 1994, *J. Med. Chem.* 37:2678-85); spatially addressable parallel solid phase or solution phase libraries; synthetic library methods requiring deconvolution; the 'one-bead one-compound' library method; and
10 synthetic library methods using affinity chromatography selection. The biological library and peptoid library approaches are limited to peptide libraries, while the other four approaches are applicable to peptide, non-peptide oligomer or small molecule libraries of compounds (Lam, 1997, *Anticancer Drug Des.* 12:145).

Examples of methods for the synthesis of molecular libraries can be found in the
15 art, for example in: DeWitt *et al.* (1993) *Proc. Natl. Acad. Sci. U.S.A.* 90:6909; Erb *et al.* (1994) *Proc. Natl. Acad. Sci. USA* 91:11422; Zuckermann *et al.* (1994) *J. Med. Chem.* 37:2678; Cho *et al.* (1993) *Science* 261:1303; Carrell *et al.* (1994) *Angew. Chem. Int. Ed. Engl.* 33:2059; Carrell *et al.* (1994) *Angew. Chem. Int. Ed. Engl.* 33:2061; and in Gallop *et al.* (1994) *J. Med. Chem.* 37:1233.

20 Libraries of compounds may be presented in solution (*e.g.*, Houghten, 1992, *Biotechniques* 13:412-421), or on beads (Lam, 1991, *Nature* 354:82-84), chips (Fodor, 1993, *Nature* 364:555-556), bacteria and/or spores, (Ladner, USP 5,223,409), plasmids (Cull *et al.*, 1992, *Proc Natl Acad Sci USA* 89:1865-1869) or on phage (Scott and Smith, 1990, *Science* 249:386-390; Devlin, 1990, *Science* 249:404-406; Cwirla *et al.*, 1990,
25 *Proc. Natl. Acad. Sci.* 87:6378-6382; Felici, 1991, *J. Mol. Biol.* 222:301-310; Ladner, *supra.*).

In one embodiment, the invention provides assays for screening candidate or test compounds which are substrates of a marker or biologically active portion thereof. In another embodiment, the invention provides assays for screening candidate or test
30 compounds which bind to a marker or biologically active portion thereof. Determining the ability of the test compound to directly bind to a marker can be accomplished, for example, by coupling the compound with a radioisotope or enzymatic label such that

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binding of the compound to the marker can be determined by detecting the labeled marker compound in a complex. For example, compounds (e.g., marker substrates) can be labeled with ^{125}I , ^{35}S , ^{14}C , or ^3H , either directly or indirectly, and the radioisotope detected by direct counting of radioemission or by scintillation counting. Alternatively, assay components can be enzymatically labeled with, for example, horseradish peroxidase, alkaline phosphatase, or luciferase, and the enzymatic label detected by determination of conversion of an appropriate substrate to product.

In another embodiment, the invention provides assays for screening candidate or test compounds which modulate the activity of a marker or a biologically active portion thereof. In all likelihood, the marker can, *in vivo*, interact with one or more molecules, such as but not limited to, peptides, proteins, hormones, cofactors and nucleic acids. For the purposes of this discussion, such cellular and extracellular molecules are referred to herein as "binding partners" or marker "substrate".

One necessary embodiment of the invention in order to facilitate such screening is the use of the marker to identify its natural *in vivo* binding partners. There are many ways to accomplish this which are known to one skilled in the art. One example is the use of the marker protein as "bait protein" in a two-hybrid assay or three-hybrid assay (see, e.g., U.S. Patent No. 5,283,317; Zervos *et al*, 1993, *Cell* 72:223-232; Madura *et al*, 1993, *J. Biol. Chem.* 268:12046-12054; Bartel *et al*, 1993, *Biotechniques* 14:920-924; Iwabuchi *et al*, 1993 *Oncogene* 8:1693-1796; Brent WO94/10300) in order to identify other proteins which bind to or interact with the marker (binding partners) and, therefore, are possibly involved in the natural function of the marker. Such marker binding partners are also likely to be involved in the propagation of signals by the marker or downstream elements of a marker-mediated signaling pathway. Alternatively, such marker binding partners may also be found to be inhibitors of the marker.

The two-hybrid system is based on the modular nature of most transcription factors, which consist of separable DNA-binding and activation domains. Briefly, the assay utilizes two different DNA constructs. In one construct, the gene that encodes a marker protein fused to a gene encoding the DNA binding domain of a known transcription factor (e.g., GAL-4). In the other construct, a DNA sequence, from a library of DNA sequences, that encodes an unidentified protein ("prey" or "sample") is fused to a gene that codes for the activation domain of the known transcription factor. If

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the "bait" and the "prey" proteins are able to interact, *in vivo*, forming a marker-dependent complex, the DNA-binding and activation domains of the transcription factor are brought into close proximity. This proximity allows transcription of a reporter gene (e.g., LacZ) which is operably linked to a transcriptional regulatory site responsive to
5 the transcription factor. Expression of the reporter gene can be readily detected and cell colonies containing the functional transcription factor can be isolated and used to obtain the cloned gene which encodes the protein which interacts with the marker protein.

In a further embodiment, assays may be devised through the use of the invention for the purpose of identifying compounds which modulate (e.g., affect either positively
10 or negatively) interactions between a marker and its substrates and/or binding partners. Such compounds can include, but are not limited to, molecules such as antibodies, peptides, hormones, oligonucleotides, nucleic acids, and analogs thereof. Such compounds may also be obtained from any available source, including systematic libraries of natural and/or synthetic compounds. The preferred assay components for use
15 in this embodiment is an breast cancer marker identified herein, the known binding partner and/or substrate of same, and the test compound. Test compounds can be supplied from any source.

The basic principle of the assay systems used to identify compounds that interfere with the interaction between the marker and its binding partner involves
20 preparing a reaction mixture containing the marker and its binding partner under conditions and for a time sufficient to allow the two products to interact and bind, thus forming a complex. In order to test an agent for inhibitory activity, the reaction mixture is prepared in the presence and absence of the test compound. The test compound can be initially included in the reaction mixture, or can be added at a time subsequent to the
25 addition of the marker and its binding partner. Control reaction mixtures are incubated without the test compound or with a placebo. The formation of any complexes between the marker and its binding partner is then detected. The formation of a complex in the control reaction, but less or no such formation in the reaction mixture containing the test compound, indicates that the compound interferes with the interaction of the marker and
30 its binding partner. Conversely, the formation of more complex in the presence of compound than in the control reaction indicates that the compound may enhance interaction of the marker and its binding partner.

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The assay for compounds that interfere with the interaction of the marker with its binding partner may be conducted in a heterogeneous or homogeneous format.

Heterogeneous assays involve anchoring either the marker or its binding partner onto a solid phase and detecting complexes anchored to the solid phase at the end of the

5 reaction. In homogeneous assays, the entire reaction is carried out in a liquid phase. In either approach, the order of addition of reactants can be varied to obtain different information about the compounds being tested. For example, test compounds that interfere with the interaction between the markers and the binding partners (*e.g.*, by competition) can be identified by conducting the reaction in the presence of the test
10 substance, *i.e.*, by adding the test substance to the reaction mixture prior to or simultaneously with the marker and its interactive binding partner. Alternatively, test compounds that disrupt preformed complexes, *e.g.*, compounds with higher binding constants that displace one of the components from the complex, can be tested by adding the test compound to the reaction mixture after complexes have been formed. The
15 various formats are briefly described below.

In a heterogeneous assay system, either the marker or its binding partner is anchored onto a solid surface or matrix, while the other corresponding non-anchored component may be labeled, either directly or indirectly. In practice, microtitre plates are often utilized for this approach. The anchored species can be immobilized by a number
20 of methods, either non-covalent or covalent, that are typically well known to one who practices the art. Non-covalent attachment can often be accomplished simply by coating the solid surface with a solution of the marker or its binding partner and drying. Alternatively, an immobilized antibody specific for the assay component to be anchored can be used for this purpose. Such surfaces can often be prepared in advance and stored.

25 In related embodiments, a fusion protein can be provided which adds a domain that allows one or both of the assay components to be anchored to a matrix. For example, glutathione-S-transferase/marker fusion proteins or glutathione-S-transferase/binding partner can be adsorbed onto glutathione sepharose beads (Sigma Chemical, St. Louis, MO) or glutathione derivatized microtiter plates, which are then
30 combined with the test compound or the test compound and either the non-adsorbed marker or its binding partner, and the mixture incubated under conditions conducive to complex formation (*e.g.*, physiological conditions). Following incubation, the beads or

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microtiter plate wells are washed to remove any unbound assay components, the immobilized complex assessed either directly or indirectly, for example, as described above. Alternatively, the complexes can be dissociated from the matrix, and the level of marker binding or activity determined using standard techniques.

- 5 Other techniques for immobilizing proteins on matrices can also be used in the screening assays of the invention. For example, either a marker or a marker binding partner can be immobilized utilizing conjugation of biotin and streptavidin. Biotinylated marker protein or target molecules can be prepared from biotin-NHS (N-hydroxy-succinimide) using techniques known in the art (*e.g.*, biotinylation kit, Pierce Chemicals, 10 Rockford, IL), and immobilized in the wells of streptavidin-coated 96 well plates (Pierce Chemical). In certain embodiments, the protein-immobilized surfaces can be prepared in advance and stored.

- In order to conduct the assay, the corresponding partner of the immobilized assay component is exposed to the coated surface with or without the test compound. After 15 the reaction is complete, unreacted assay components are removed (*e.g.*, by washing) and any complexes formed will remain immobilized on the solid surface. The detection of complexes anchored on the solid surface can be accomplished in a number of ways. Where the non-immobilized component is pre-labeled, the detection of label immobilized on the surface indicates that complexes were formed. Where the non- 20 immobilized component is not pre-labeled, an indirect label can be used to detect complexes anchored on the surface; *e.g.*, using a labeled antibody specific for the initially non-immobilized species (the antibody, in turn, can be directly labeled or indirectly labeled with, *e.g.*, a labeled anti-Ig antibody). Depending upon the order of addition of reaction components, test compounds which modulate (inhibit or enhance) 25 complex formation or which disrupt preformed complexes can be detected.

- In an alternate embodiment of the invention, a homogeneous assay may be used. This is typically a reaction, analogous to those mentioned above, which is conducted in a liquid phase in the presence or absence of the test compound. The formed complexes are then separated from unreacted components, and the amount of complex formed is 30 determined. As mentioned for heterogeneous assay systems, the order of addition of reactants to the liquid phase can yield information about which test compounds

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modulate (inhibit or enhance) complex formation and which disrupt preformed complexes.

In such a homogeneous assay, the reaction products may be separated from unreacted assay components by any of a number of standard techniques, including but not limited to: differential centrifugation, chromatography, electrophoresis and immunoprecipitation. In differential centrifugation, complexes of molecules may be separated from uncomplexed molecules through a series of centrifugal steps, due to the different sedimentation equilibria of complexes based on their different sizes and densities (see, for example, Rivas, G., and Minton, A.P., *Trends Biochem Sci* 1993 Aug;18(8):284-7). Standard chromatographic techniques may also be utilized to separate complexed molecules from uncomplexed ones. For example, gel filtration chromatography separates molecules based on size, and through the utilization of an appropriate gel filtration resin in a column format, for example, the relatively larger complex may be separated from the relatively smaller uncomplexed components. Similarly, the relatively different charge properties of the complex as compared to the uncomplexed molecules may be exploited to differentially separate the complex from the remaining individual reactants, for example through the use of ion-exchange chromatography resins. Such resins and chromatographic techniques are well known to one skilled in the art (see, e.g., Heegaard, 1998, *J Mol. Recognit.* 11:141-148; Hage and Tweed, 1997, *J. Chromatogr. B. Biomed. Sci. Appl.*, 699:499-525). Gel electrophoresis may also be employed to separate complexed molecules from unbound species (see, e.g., Ausubel *et al* (eds.), In: *Current Protocols in Molecular Biology*, J. Wiley & Sons, New York, 1999). In this technique, protein or nucleic acid complexes are separated based on size or charge, for example. In order to maintain the binding interaction during the electrophoretic process, non-denaturing gels in the absence of reducing agent are typically preferred, but conditions appropriate to the particular interactants will be well known to one skilled in the art. Immunoprecipitation is another common technique utilized for the isolation of a protein-protein complex from solution (see, e.g., Ausubel *et al* (eds.), In: *Current Protocols in Molecular Biology*, J. Wiley & Sons, New York, 1999). In this technique, all proteins binding to an antibody specific to one of the binding molecules are precipitated from solution by conjugating the antibody to a polymer bead that may be readily collected by centrifugation. The bound assay

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components are released from the beads (through a specific proteolysis event or other technique well known in the art which will not disturb the protein-protein interaction in the complex), and a second immunoprecipitation step is performed, this time utilizing antibodies specific for the correspondingly different interacting assay component. In this

5 manner, only formed complexes should remain attached to the beads. Variations in complex formation in both the presence and the absence of a test compound can be compared, thus offering information about the ability of the compound to modulate interactions between the marker and its binding partner.

Also within the scope of the present invention are methods for direct detection of
10 interactions between the marker and its natural binding partner and/or a test compound in a homogeneous or heterogeneous assay system without further sample manipulation. For example, the technique of fluorescence energy transfer may be utilized (see, *e.g.*, Lakowicz *et al*, U.S. Patent No. 5,631,169; Stavrianopoulos *et al*, U.S. Patent No. 4,868,103). Generally, this technique involves the addition of a fluorophore label on a
15 first 'donor' molecule (*e.g.*, marker or test compound) such that its emitted fluorescent energy will be absorbed by a fluorescent label on a second, 'acceptor' molecule (*e.g.*, marker or test compound), which in turn is able to fluoresce due to the absorbed energy. Alternately, the 'donor' protein molecule may simply utilize the natural fluorescent energy of tryptophan residues. Labels are chosen that emit different wavelengths of
20 light, such that the 'acceptor' molecule label may be differentiated from that of the 'donor'. Since the efficiency of energy transfer between the labels is related to the distance separating the molecules, spatial relationships between the molecules can be assessed. In a situation in which binding occurs between the molecules, the fluorescent emission of the 'acceptor' molecule label in the assay should be maximal. An FET
25 binding event can be conveniently measured through standard fluorometric detection means well known in the art (*e.g.*, using a fluorimeter). A test substance which either enhances or hinders participation of one of the species in the preformed complex will result in the generation of a signal variant to that of background. In this way, test substances that modulate interactions between a marker and its binding partner can be
30 identified in controlled assays.

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In another embodiment, modulators of marker expression are identified in a method wherein a cell is contacted with a candidate compound and the expression of mRNA or protein, corresponding to a marker in the cell, is determined. The level of expression of mRNA or protein in the presence of the candidate compound is compared
5 to the level of expression of mRNA or protein in the absence of the candidate compound. The candidate compound can then be identified as a modulator of marker expression based on this comparison. For example, when expression of marker mRNA or protein is greater (statistically significantly greater) in the presence of the candidate compound than in its absence, the candidate compound is identified as a stimulator of
10 marker mRNA or protein expression. Conversely, when expression of marker mRNA or protein is less (statistically significantly less) in the presence of the candidate compound than in its absence, the candidate compound is identified as an inhibitor of marker mRNA or protein expression. The level of marker mRNA or protein expression in the cells can be determined by methods described herein for detecting marker mRNA
15 or protein.

In another aspect, the invention pertains to a combination of two or more of the assays described herein. For example, a modulating agent can be identified using a cell-based or a cell free assay, and the ability of the agent to modulate the activity of a marker protein can be further confirmed *in vivo*, *e.g.*, in a whole animal model for
20 cellular transformation and/or tumorigenesis.

This invention further pertains to novel agents identified by the above-described screening assays. Accordingly, it is within the scope of this invention to further use an agent identified as described herein in an appropriate animal model. For example, an agent identified as described herein (*e.g.*, an marker modulating agent, an antisense
25 marker nucleic acid molecule, an marker-specific antibody, or an marker-binding partner) can be used in an animal model to determine the efficacy, toxicity, or side effects of treatment with such an agent. Alternatively, an agent identified as described herein can be used in an animal model to determine the mechanism of action of such an agent. Furthermore, this invention pertains to uses of novel agents identified by the
30 above-described screening assays for treatments as described herein.

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It is understood that appropriate doses of small molecule agents and protein or polypeptide agents depends upon a number of factors within the knowledge of the ordinarily skilled physician, veterinarian, or researcher. The dose(s) of these agents will vary, for example, depending upon the identity, size, and condition of the subject or sample being treated, further depending upon the route by which the composition is to be administered, if applicable, and the effect which the practitioner desires the agent to have upon the nucleic acid or polypeptide of the invention. Exemplary doses of a small molecule include milligram or microgram amounts per kilogram of subject or sample weight (*e.g.* about 1 microgram per kilogram to about 500 milligrams per kilogram, about 100 micrograms per kilogram to about 5 milligrams per kilogram, or about 1 microgram per kilogram to about 50 micrograms per kilogram). Exemplary doses of a protein or polypeptide include gram, milligram or microgram amounts per kilogram of subject or sample weight (*e.g.* about 1 microgram per kilogram to about 5 grams per kilogram, about 100 micrograms per kilogram to about 500 milligrams per kilogram, or about 1 milligram per kilogram to about 50 milligrams per kilogram). It is furthermore understood that appropriate doses of one of these agents depend upon the potency of the agent with respect to the expression or activity to be modulated. Such appropriate doses can be determined using the assays described herein. When one or more of these agents is to be administered to an animal (*e.g.* a human) in order to modulate expression or activity of a polypeptide or nucleic acid of the invention, a physician, veterinarian, or researcher can, for example, prescribe a relatively low dose at first, subsequently increasing the dose until an appropriate response is obtained. In addition, it is understood that the specific dose level for any particular animal subject will depend upon a variety of factors including the activity of the specific agent employed, the age, body weight, general health, gender, and diet of the subject, the time of administration, the route of administration, the rate of excretion, any drug combination, and the degree of expression or activity to be modulated.

A pharmaceutical composition of the invention is formulated to be compatible with its intended route of administration. Examples of routes of administration include parenteral, *e.g.*, intravenous, intradermal, subcutaneous, oral (*e.g.*, inhalation), transdermal (topical), transmucosal, and rectal administration. Solutions or suspensions used for parenteral, intradermal, or subcutaneous application can include the following

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components: a sterile diluent such as water for injection, saline solution, fixed oils, polyethylene glycols, glycerine, propylene glycol or other synthetic solvents; antibacterial agents such as benzyl alcohol or methyl parabens; antioxidants such as ascorbic acid or sodium bisulfite; chelating agents such as ethylenediamine-tetraacetic acid; buffers such as acetates, citrates or phosphates and agents for the adjustment of tonicity such as sodium chloride or dextrose. pH can be adjusted with acids or bases, such as hydrochloric acid or sodium hydroxide. The parenteral preparation can be enclosed in ampules, disposable syringes or multiple dose vials made of glass or plastic.

Pharmaceutical compositions suitable for injectable use include sterile aqueous solutions (where water soluble) or dispersions and sterile powders for the extemporaneous preparation of sterile injectable solutions or dispersions. For intravenous administration, suitable carriers include physiological saline, bacteriostatic water, Cremophor EL (BASF; Parsippany, NJ) or phosphate buffered saline (PBS). In all cases, the composition must be sterile and should be fluid to the extent that easy syringability exists. It must be stable under the conditions of manufacture and storage and must be preserved against the contaminating action of microorganisms such as bacteria and fungi. The carrier can be a solvent or dispersion medium containing, for example, water, ethanol, polyol (for example, glycerol, propylene glycol, and liquid polyethylene glycol, and the like), and suitable mixtures thereof. The proper fluidity can be maintained, for example, by the use of a coating such as lecithin, by the maintenance of the required particle size in the case of dispersion and by the use of surfactants. Prevention of the action of microorganisms can be achieved by various antibacterial and antifungal agents, for example, parabens, chlorobutanol, phenol, ascorbic acid, thimerosal, and the like. In many cases, it will be preferable to include isotonic agents, for example, sugars, polyalcohols such as mannitol, sorbitol, or sodium chloride in the composition. Prolonged absorption of the injectable compositions can be brought about by including in the composition an agent which delays absorption, for example, aluminum monostearate and gelatin.

Sterile injectable solutions can be prepared by incorporating the active compound (*e.g.*, a polypeptide or antibody) in the required amount in an appropriate solvent with one or a combination of ingredients enumerated above, as required, followed by filtered sterilization. Generally, dispersions are prepared by incorporating

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the active compound into a sterile vehicle which contains a basic dispersion medium, and then incorporating the required other ingredients from those enumerated above. In the case of sterile powders for the preparation of sterile injectable solutions, the preferred methods of preparation are vacuum drying and freeze-drying which yields a powder of the active ingredient plus any additional desired ingredient from a previously sterile-filtered solution thereof.

Oral compositions generally include an inert diluent or an edible carrier. They can be enclosed in gelatin capsules or compressed into tablets. For the purpose of oral therapeutic administration, the active compound can be incorporated with excipients and used in the form of tablets, troches, or capsules. Oral compositions can also be prepared using a fluid carrier for use as a mouthwash, wherein the compound in the fluid carrier is applied orally and swished and expectorated or swallowed.

Pharmaceutically compatible binding agents, and/or adjuvant materials can be included as part of the composition. The tablets, pills, capsules, troches, and the like can contain any of the following ingredients, or compounds of a similar nature: a binder such as microcrystalline cellulose, gum tragacanth or gelatin; an excipient such as starch or lactose, a disintegrating agent such as alginic acid, Primogel, or corn starch; a lubricant such as magnesium stearate or Sterotes; a glidant such as colloidal silicon dioxide; a sweetening agent such as sucrose or saccharin; or a flavoring agent such as peppermint, methyl salicylate, or orange flavoring.

For administration by inhalation, the compounds are delivered in the form of an aerosol spray from a pressurized container or dispenser which contains a suitable propellant, *e.g.*, a gas such as carbon dioxide, or a nebulizer.

Systemic administration can also be by transmucosal or transdermal means. For transmucosal or transdermal administration, penetrants appropriate to the barrier to be permeated are used in the formulation. Such penetrants are generally known in the art, and include, for example, for transmucosal administration, detergents, bile salts, and fusidic acid derivatives. Transmucosal administration can be accomplished through the use of nasal sprays or suppositories. For transdermal administration, the active compounds are formulated into ointments, salves, gels, or creams as generally known in the art.

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The compounds can also be prepared in the form of suppositories (*e.g.*, with conventional suppository bases such as cocoa butter and other glycerides) or retention enemas for rectal delivery.

In one embodiment, the active compounds are prepared with carriers that will
5 protect the compound against rapid elimination from the body, such as a controlled release formulation, including implants and microencapsulated delivery systems. Biodegradable, biocompatible polymers can be used, such as ethylene vinyl acetate, polyanhydrides, polyglycolic acid, collagen, polyorthoesters, and polylactic acid. Methods for preparation of such formulations will be apparent to those skilled in the art.
10 The materials can also be obtained commercially from Alza Corporation and Nova Pharmaceuticals, Inc. Liposomal suspensions (including liposomes having monoclonal antibodies incorporated therein or thereon) can also be used as pharmaceutically acceptable carriers. These can be prepared according to methods known to those skilled in the art, for example, as described in U.S. Patent No. 4,522,811.

15 It is especially advantageous to formulate oral or parenteral compositions in dosage unit form for ease of administration and uniformity of dosage. Dosage unit form as used herein refers to physically discrete units suited as unitary dosages for the subject to be treated; each unit containing a predetermined quantity of active compound calculated to produce the desired therapeutic effect in association with the required
20 pharmaceutical carrier. The specification for the dosage unit forms of the invention are dictated by and directly dependent on the unique characteristics of the active compound and the particular therapeutic effect to be achieved, and the limitations inherent in the art of compounding such an active compound for the treatment of individuals.

For antibodies, the preferred dosage is 0.1 mg/kg to 100 mg/kg of body weight
25 (generally 10 mg/kg to 20 mg/kg). If the antibody is to act in the brain, a dosage of 50 mg/kg to 100 mg/kg is usually appropriate. Generally, partially human antibodies and fully human antibodies have a longer half-life within the human body than other antibodies. Accordingly, lower dosages and less frequent administration is often possible. Modifications such as lipidation can be used to stabilize antibodies and to
30 enhance uptake and tissue penetration (*e.g.*, into the breast epithelium). A method for lipidation of antibodies is described by Cruikshank *et al.* (1997) *J. Acquired Immune Deficiency Syndromes and Human Retrovirology* 14:193.

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The nucleic acid molecules corresponding to a marker of the invention can be inserted into vectors and used as gene therapy vectors. Gene therapy vectors can be delivered to a subject by, for example, intravenous injection, local administration (U.S. Patent 5,328,470), or by stereotactic injection (see, *e.g.*, Chen *et al.*, 1994, *Proc. Natl. Acad. Sci. USA* 91:3054-3057). The pharmaceutical preparation of the gene therapy vector can include the gene therapy vector in an acceptable diluent, or can comprise a slow release matrix in which the gene delivery vehicle is imbedded. Alternatively, where the complete gene delivery vector can be produced intact from recombinant cells, *e.g.* retroviral vectors, the pharmaceutical preparation can include one or more cells which produce the gene delivery system.

The pharmaceutical compositions can be included in a container, pack, or dispenser together with instructions for administration.

V. Electronic Apparatus Readable Media and Arrays

Electronic apparatus readable media comprising a breast cancer marker of the present invention is also provided. As used herein, "electronic apparatus readable media" refers to any suitable medium for storing, holding or containing data or information that can be read and accessed directly by an electronic apparatus. Such media can include, but are not limited to: magnetic storage media, such as floppy discs, hard disc storage medium, and magnetic tape; optical storage media such as compact disc; electronic storage media such as RAM, ROM, EPROM, EEPROM and the like; general hard disks and hybrids of these categories such as magnetic/optical storage media. The medium is adapted or configured for having recorded thereon a marker of the present invention.

As used herein, the term "electronic apparatus" is intended to include any suitable computing or processing apparatus or other device configured or adapted for storing data or information. Examples of electronic apparatus suitable for use with the present invention include stand-alone computing apparatus; networks, including a local area network (LAN), a wide area network (WAN) Internet, Intranet, and Extranet; electronic appliances such as a personal digital assistants (PDAs), cellular phone, pager and the like; and local and distributed processing systems.

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As used herein, "recorded" refers to a process for storing or encoding information on the electronic apparatus readable medium. Those skilled in the art can readily adopt any of the presently known methods for recording information on known media to generate manufactures comprising the markers of the present invention.

5 A variety of software programs and formats can be used to store the marker information of the present invention on the electronic apparatus readable medium. For example, the nucleic acid sequence corresponding to the markers can be represented in a word processing text file, formatted in commercially-available software such as WordPerfect and MicroSoft Word, or represented in the form of an ASCII file, stored in
10 a database application, such as DB2, Sybase, Oracle, or the like, as well as in other forms. Any number of dataprocessor structuring formats (*e.g.*, text file or database) may be employed in order to obtain or create a medium having recorded thereon the markers of the present invention.

By providing the markers of the invention in readable form, one can routinely
15 access the marker sequence information for a variety of purposes. For example, one skilled in the art can use the nucleotide or amino acid sequences of the present invention in readable form to compare a target sequence or target structural motif with the sequence information stored within the data storage means. Search means are used to identify fragments or regions of the sequences of the invention which match a particular
20 target sequence or target motif.

The present invention therefore provides a medium for holding instructions for performing a method for determining whether a subject has breast cancer or a pre-disposition to breast cancer, wherein the method comprises the steps of determining the presence or absence of a breast cancer marker and based on the presence or absence of
25 the breast cancer marker, determining whether the subject has breast cancer or a pre-disposition to breast cancer and/or recommending a particular treatment for the breast cancer or pre- breast cancer condition.

The present invention further provides in an electronic system and/or in a network, a method for determining whether a subject has breast cancer or a pre-
30 disposition to breast cancer associated with a breast cancer marker wherein the method comprises the steps of determining the presence or absence of the breast cancer marker, and based on the presence or absence of the breast cancer marker, determining whether

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the subject has breast cancer or a pre-disposition to breast cancer, and/or recommending a particular treatment for the breast cancer or pre- breast cancer condition. The method may further comprise the step of receiving phenotypic information associated with the subject and/or acquiring from a network phenotypic information associated with the
5 subject.

The present invention also provides in a network, a method for determining whether a subject has breast cancer or a pre-disposition to breast cancer associated with a breast cancer marker, said method comprising the steps of receiving information associated with the breast cancer marker receiving phenotypic information associated
10 with the subject, acquiring information from the network corresponding to the breast cancer marker and/or breast cancer, and based on one or more of the phenotypic information, the breast cancer marker, and the acquired information, determining whether the subject has breast cancer or a pre-disposition to breast cancer. The method may further comprise the step of recommending a particular treatment for the breast
15 cancer or pre- breast cancer condition.

The present invention also provides a business method for determining whether a subject has breast cancer or a pre-disposition to breast cancer, said method comprising the steps of receiving information associated with the breast cancer marker, receiving phenotypic information associated with the subject, acquiring information from the
20 network corresponding to the breast cancer marker and/or breast cancer, and based on one or more of the phenotypic information, the breast cancer marker, and the acquired information, determining whether the subject has breast cancer or a pre-disposition to breast cancer. The method may further comprise the step of recommending a particular treatment for the breast cancer or pre- breast cancer condition.

25 The invention also includes an array comprising a breast cancer marker of the present invention. The array can be used to assay expression of one or more genes in the array. In one embodiment, the array can be used to assay gene expression in a tissue to ascertain tissue specificity of genes in the array. In this manner, up to about 7600 genes can be simultaneously assayed for expression. This allows a profile to be
30 developed showing a battery of genes specifically expressed in one or more tissues.

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In addition to such qualitative determination, the invention allows the quantitation of gene expression. Thus, not only tissue specificity, but also the level of expression of a battery of genes in the tissue is ascertainable. Thus, genes can be grouped on the basis of their tissue expression *per se* and level of expression in that tissue. This is useful, for example, in ascertaining the relationship of gene expression between or among tissues. Thus, one tissue can be perturbed and the effect on gene expression in a second tissue can be determined. In this context, the effect of one cell type on another cell type in response to a biological stimulus can be determined. Such a determination is useful, for example, to know the effect of cell-cell interaction at the level of gene expression. If an agent is administered therapeutically to treat one cell type but has an undesirable effect on another cell type, the invention provides an assay to determine the molecular basis of the undesirable effect and thus provides the opportunity to co-administer a counteracting agent or otherwise treat the undesired effect. Similarly, even within a single cell type, undesirable biological effects can be determined at the molecular level. Thus, the effects of an agent on expression of other than the target gene can be ascertained and counteracted.

In another embodiment, the array can be used to monitor the time course of expression of one or more genes in the array. This can occur in various biological contexts, as disclosed herein, for example development of breast cancer, progression of breast cancer, and processes, such a cellular transformation associated with breast cancer.

The array is also useful for ascertaining the effect of the expression of a gene on the expression of other genes in the same cell or in different cells. This provides, for example, for a selection of alternate molecular targets for therapeutic intervention if the ultimate or downstream target cannot be regulated.

The array is also useful for ascertaining differential expression patterns of one or more genes in normal and abnormal cells. This provides a battery of genes that could serve as a molecular target for diagnosis or therapeutic intervention.

30 VI. Predictive Medicine

The present invention pertains to the field of predictive medicine in which diagnostic assays, prognostic assays, pharmacogenomics, and monitoring clinical trials

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are used for prognostic (predictive) purposes to thereby treat an individual prophylactically. Accordingly, one aspect of the present invention relates to diagnostic assays for determining the level of expression of polypeptides or nucleic acids corresponding to one or more markers of the invention, in order to determine whether
5 an individual is at risk of developing breast cancer. Such assays can be used for prognostic or predictive purposes to thereby prophylactically treat an individual prior to the onset of the cancer.

Yet another aspect of the invention pertains to monitoring the influence of agents (e.g., drugs or other compounds administered either to inhibit breast cancer or to treat or
10 prevent any other disorder {i.e. in order to understand any breast carcinogenic effects that such treatment may have}) on the expression or activity of a marker of the invention in clinical trials. These and other agents are described in further detail in the following sections.

15 A. Diagnostic Assays

An exemplary method for detecting the presence or absence of a polypeptide or nucleic acid corresponding to a marker of the invention in a biological sample involves obtaining a biological sample (e.g. a breast-associated body fluid) from a test subject and contacting the biological sample with a compound or an agent capable of detecting
20 the polypeptide or nucleic acid (e.g., mRNA, genomic DNA, or cDNA). The detection methods of the invention can thus be used to detect mRNA, protein, cDNA, or genomic DNA, for example, in a biological sample *in vitro* as well as *in vivo*. For example, *in vitro* techniques for detection of mRNA include Northern hybridizations and *in situ* hybridizations. *In vitro* techniques for detection of a polypeptide corresponding to a
25 marker of the invention include enzyme linked immunosorbent assays (ELISAs), Western blots, immunoprecipitations and immunofluorescence. *In vitro* techniques for detection of genomic DNA include Southern hybridizations. Furthermore, *in vivo* techniques for detection of a polypeptide corresponding to a marker of the invention include introducing into a subject a labeled antibody directed against the polypeptide.
30 For example, the antibody can be labeled with a radioactive marker whose presence and location in a subject can be detected by standard imaging techniques.

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A general principle of such diagnostic and prognostic assays involves preparing a sample or reaction mixture that may contain a marker, and a probe, under appropriate conditions and for a time sufficient to allow the marker and probe to interact and bind, thus forming a complex that can be removed and/or detected in the reaction mixture.

5 These assays can be conducted in a variety of ways.

For example, one method to conduct such an assay would involve anchoring the marker or probe onto a solid phase support, also referred to as a substrate, and detecting target marker/probe complexes anchored on the solid phase at the end of the reaction.

In one embodiment of such a method, a sample from a subject, which is to be assayed
10 for presence and/or concentration of marker, can be anchored onto a carrier or solid phase support. In another embodiment, the reverse situation is possible, in which the probe can be anchored to a solid phase and a sample from a subject can be allowed to react as an unanchored component of the assay.

There are many established methods for anchoring assay components to a solid
15 phase. These include, without limitation, marker or probe molecules which are immobilized through conjugation of biotin and streptavidin. Such biotinylated assay components can be prepared from biotin-NHS (N-hydroxy-succinimide) using techniques known in the art (*e.g.*, biotinylation kit, Pierce Chemicals, Rockford, IL), and immobilized in the wells of streptavidin-coated 96 well plates (Pierce Chemical). In
20 certain embodiments, the surfaces with immobilized assay components can be prepared in advance and stored.

Other suitable carriers or solid phase supports for such assays include any material capable of binding the class of molecule to which the marker or probe belongs. Well-known supports or carriers include, but are not limited to, glass, polystyrene,
25 nylon, polypropylene, nylon, polyethylene, dextran, amylases, natural and modified celluloses, polyacrylamides, gabbros, and magnetite.

In order to conduct assays with the above mentioned approaches, the non-immobilized component is added to the solid phase upon which the second component is anchored. After the reaction is complete, uncomplexed components may be removed
30 (*e.g.*, by washing) under conditions such that any complexes formed will remain immobilized upon the solid phase. The detection of marker/probe complexes anchored to the solid phase can be accomplished in a number of methods outlined herein.

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In a preferred embodiment, the probe, when it is the unanchored assay component, can be labeled for the purpose of detection and readout of the assay, either directly or indirectly, with detectable labels discussed herein and which are well-known to one skilled in the art.

5 It is also possible to directly detect marker/probe complex formation without further manipulation or labeling of either component (marker or probe), for example by utilizing the technique of fluorescence energy transfer (see, for example, Lakowicz *et al.*, U.S. Patent No. 5,631,169; Stavrianopoulos, *et al.*, U.S. Patent No. 4,868,103). A fluorophore label on the first, 'donor' molecule is selected such that, upon excitation
10 with incident light of appropriate wavelength, its emitted fluorescent energy will be absorbed by a fluorescent label on a second 'acceptor' molecule, which in turn is able to fluoresce due to the absorbed energy. Alternately, the 'donor' protein molecule may simply utilize the natural fluorescent energy of tryptophan residues. Labels are chosen that emit different wavelengths of light, such that the 'acceptor' molecule label may be
15 differentiated from that of the 'donor'. Since the efficiency of energy transfer between the labels is related to the distance separating the molecules, spatial relationships between the molecules can be assessed. In a situation in which binding occurs between the molecules, the fluorescent emission of the 'acceptor' molecule label in the assay should be maximal. An FET binding event can be conveniently measured through
20 standard fluorometric detection means well known in the art (*e.g.*, using a fluorimeter).

 In another embodiment, determination of the ability of a probe to recognize a marker can be accomplished without labeling either assay component (probe or marker) by utilizing a technology such as real-time Biomolecular Interaction Analysis (BIA) (see, *e.g.*, Sjolander, S. and Urbaniczky, C., 1991, *Anal. Chem.* 63:2338-2345 and
25 Szabo *et al.*, 1995, *Curr. Opin. Struct. Biol.* 5:699-705). As used herein, "BIA" or "surface plasmon resonance" is a technology for studying biospecific interactions in real time, without labeling any of the interactants (*e.g.*, BIAcore). Changes in the mass at the binding surface (indicative of a binding event) result in alterations of the refractive index of light near the surface (the optical phenomenon of surface plasmon resonance (SPR)),
30 resulting in a detectable signal which can be used as an indication of real-time reactions between biological molecules.

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Alternatively, in another embodiment, analogous diagnostic and prognostic assays can be conducted with marker and probe as solutes in a liquid phase. In such an assay, the complexed marker and probe are separated from uncomplexed components by any of a number of standard techniques, including but not limited to: differential

5 centrifugation, chromatography, electrophoresis and immunoprecipitation. In differential centrifugation, marker/probe complexes may be separated from uncomplexed assay components through a series of centrifugal steps, due to the different sedimentation equilibria of complexes based on their different sizes and densities (see, for example, Rivas, G., and Minton, A.P., 1993, *Trends Biochem Sci.* 18(8):284-7).

10 Standard chromatographic techniques may also be utilized to separate complexed molecules from uncomplexed ones. For example, gel filtration chromatography separates molecules based on size, and through the utilization of an appropriate gel filtration resin in a column format, for example, the relatively larger complex may be separated from the relatively smaller uncomplexed components. Similarly, the

15 relatively different charge properties of the marker/probe complex as compared to the uncomplexed components may be exploited to differentiate the complex from uncomplexed components, for example through the utilization of ion-exchange chromatography resins. Such resins and chromatographic techniques are well known to one skilled in the art (see, *e.g.*, Heegaard, N.H., 1998, *J. Mol. Recognit.* Winter 11(1-

20 6):141-8; Hage, D.S., and Tweed, S.A. *J Chromatogr B Biomed Sci Appl* 1997 Oct 10;699(1-2):499-525). Gel electrophoresis may also be employed to separate complexed assay components from unbound components (see, *e.g.*, Ausubel *et al.*, ed., *Current Protocols in Molecular Biology*, John Wiley & Sons, New York, 1987-1999). In this technique, protein or nucleic acid complexes are separated based on size or

25 charge, for example. In order to maintain the binding interaction during the electrophoretic process, non-denaturing gel matrix materials and conditions in the absence of reducing agent are typically preferred. Appropriate conditions to the particular assay and components thereof will be well known to one skilled in the art.

In a particular embodiment, the level of mRNA corresponding to the marker can

30 be determined both by *in situ* and by *in vitro* formats in a biological sample using methods known in the art. The term "biological sample" is intended to include tissues, cells, biological fluids and isolates thereof, isolated from a subject, as well as tissues,

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cells and fluids present within a subject. Many expression detection methods use isolated RNA. For *in vitro* methods, any RNA isolation technique that does not select against the isolation of mRNA can be utilized for the purification of RNA from breast cells (see, *e.g.*, Ausubel *et al.*, ed., *Current Protocols in Molecular Biology*, John Wiley & Sons, New York 1987-1999). Additionally, large numbers of tissue samples can readily be processed using techniques well known to those of skill in the art, such as, for example, the single-step RNA isolation process of Chomczynski (1989, U.S. Patent No. 4,843,155).

The isolated mRNA can be used in hybridization or amplification assays that include, but are not limited to, Southern or Northern analyses, polymerase chain reaction analyses and probe arrays. One preferred diagnostic method for the detection of mRNA levels involves contacting the isolated mRNA with a nucleic acid molecule (probe) that can hybridize to the mRNA encoded by the gene being detected. The nucleic acid probe can be, for example, a full-length cDNA, or a portion thereof, such as an oligonucleotide of at least 7, 15, 30, 50, 100, 250 or 500 nucleotides in length and sufficient to specifically hybridize under stringent conditions to a mRNA or genomic DNA encoding a marker of the present invention. Other suitable probes for use in the diagnostic assays of the invention are described herein. Hybridization of an mRNA with the probe indicates that the marker in question is being expressed.

In one format, the mRNA is immobilized on a solid surface and contacted with a probe, for example by running the isolated mRNA on an agarose gel and transferring the mRNA from the gel to a membrane, such as nitrocellulose. In an alternative format, the probe(s) are immobilized on a solid surface and the mRNA is contacted with the probe(s), for example, in an Affymetrix gene chip array. A skilled artisan can readily adapt known mRNA detection methods for use in detecting the level of mRNA encoded by the markers of the present invention.

An alternative method for determining the level of mRNA corresponding to a marker of the present invention in a sample involves the process of nucleic acid amplification, *e.g.*, by rtPCR (the experimental embodiment set forth in Mullis, 1987, U.S. Patent No. 4,683,202), ligase chain reaction (Barany, 1991, *Proc. Natl. Acad. Sci. USA*, 88:189-193), self sustained sequence replication (Guatelli *et al.*, 1990, *Proc. Natl. Acad. Sci. USA* 87:1874-1878), transcriptional amplification system (Kwoh *et al.*, 1989,

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Proc. Natl. Acad. Sci. USA 86:1173-1177), Q-Beta Replicase (Lizardi *et al.*, 1988, *Bio/Technology* 6:1197), rolling circle replication (Lizardi *et al.*, U.S. Patent No. 5,854,033) or any other nucleic acid amplification method, followed by the detection of the amplified molecules using techniques well known to those of skill in the art. These
5 detection schemes are especially useful for the detection of nucleic acid molecules if such molecules are present in very low numbers. As used herein, amplification primers are defined as being a pair of nucleic acid molecules that can anneal to 5' or 3' regions of a gene (plus and minus strands, respectively, or vice-versa) and contain a short region in between. In general, amplification primers are from about 10 to 30 nucleotides in length
10 and flank a region from about 50 to 200 nucleotides in length. Under appropriate conditions and with appropriate reagents, such primers permit the amplification of a nucleic acid molecule comprising the nucleotide sequence flanked by the primers.

For *in situ* methods, mRNA does not need to be isolated from the breast cells prior to detection. In such methods, a cell or tissue sample is prepared/processed using
15 known histological methods. The sample is then immobilized on a support, typically a glass slide, and then contacted with a probe that can hybridize to mRNA that encodes the marker.

As an alternative to making determinations based on the absolute expression level of the marker, determinations may be based on the normalized expression level of
20 the marker. Expression levels are normalized by correcting the absolute expression level of a marker by comparing its expression to the expression of a gene that is not a marker, *e.g.*, a housekeeping gene that is constitutively expressed. Suitable genes for normalization include housekeeping genes such as the actin gene, or epithelial cell-specific genes. This normalization allows the comparison of the expression level in one
25 sample, *e.g.*, a patient sample, to another sample, *e.g.*, a non-breast cancer sample, or between samples from different sources.

Alternatively, the expression level can be provided as a relative expression level. To determine a relative expression level of a marker, the level of expression of the marker is determined for 10 or more samples of normal versus cancer cell isolates,
30 preferably 50 or more samples, prior to the determination of the expression level for the sample in question. The mean expression level of each of the genes assayed in the larger number of samples is determined and this is used as a baseline expression level

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for the marker. The expression level of the marker determined for the test sample (absolute level of expression) is then divided by the mean expression value obtained for that marker. This provides a relative expression level.

Preferably, the samples used in the baseline determination will be from breast cancer or from non-breast cancer cells of breast tissue. The choice of the cell source is dependent on the use of the relative expression level. Using expression found in normal tissues as a mean expression score aids in validating whether the marker assayed is breast specific (versus normal cells). In addition, as more data is accumulated, the mean expression value can be revised, providing improved relative expression values based on accumulated data. Expression data from breast cells provides a means for grading the severity of the breast cancer state.

In another embodiment of the present invention, a polypeptide corresponding to a marker is detected. A preferred agent for detecting a polypeptide of the invention is an antibody capable of binding to a polypeptide corresponding to a marker of the invention, preferably an antibody with a detectable label. Antibodies can be polyclonal, or more preferably, monoclonal. An intact antibody, or a fragment thereof (*e.g.*, Fab or F(ab')₂) can be used. The term "labeled", with regard to the probe or antibody, is intended to encompass direct labeling of the probe or antibody by coupling (*i.e.*, physically linking) a detectable substance to the probe or antibody, as well as indirect labeling of the probe or antibody by reactivity with another reagent that is directly labeled. Examples of indirect labeling include detection of a primary antibody using a fluorescently labeled secondary antibody and end-labeling of a DNA probe with biotin such that it can be detected with fluorescently labeled streptavidin.

Proteins from breast cells can be isolated using techniques that are well known to those of skill in the art. The protein isolation methods employed can, for example, be such as those described in Harlow and Lane (Harlow and Lane, 1988, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York).

A variety of formats can be employed to determine whether a sample contains a protein that binds to a given antibody. Examples of such formats include, but are not limited to, enzyme immunoassay (EIA), radioimmunoassay (RIA), Western blot analysis and enzyme linked immunoabsorbant assay (ELISA). A skilled artisan can

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readily adapt known protein/antibody detection methods for use in determining whether breast cells express a marker of the present invention.

In one format, antibodies, or antibody fragments, can be used in methods such as Western blots or immunofluorescence techniques to detect the expressed proteins. In such uses, it is generally preferable to immobilize either the antibody or proteins on a solid support. Suitable solid phase supports or carriers include any support capable of binding an antigen or an antibody. Well-known supports or carriers include glass, polystyrene, polypropylene, polyethylene, dextran, nylon, amylases, natural and modified celluloses, polyacrylamides, gabbros, and magnetite.

One skilled in the art will know many other suitable carriers for binding antibody or antigen, and will be able to adapt such support for use with the present invention. For example, protein isolated from breast cells can be run on a polyacrylamide gel electrophoresis and immobilized onto a solid phase support such as nitrocellulose. The support can then be washed with suitable buffers followed by treatment with the detectably labeled antibody. The solid phase support can then be washed with the buffer a second time to remove unbound antibody. The amount of bound label on the solid support can then be detected by conventional means.

The invention also encompasses kits for detecting the presence of a polypeptide or nucleic acid corresponding to a marker of the invention in a biological sample (*e.g.* an breast-associated body fluid). Such kits can be used to determine if a subject is suffering from or is at increased risk of developing breast cancer. For example, the kit can comprise a labeled compound or agent capable of detecting a polypeptide or an mRNA encoding a polypeptide corresponding to a marker of the invention in a biological sample and means for determining the amount of the polypeptide or mRNA in the sample (*e.g.*, an antibody which binds the polypeptide or an oligonucleotide probe which binds to DNA or mRNA encoding the polypeptide). Kits can also include instructions for interpreting the results obtained using the kit.

For antibody-based kits, the kit can comprise, for example: (1) a first antibody (*e.g.*, attached to a solid support) which binds to a polypeptide corresponding to a marker of the invention; and, optionally, (2) a second, different antibody which binds to either the polypeptide or the first antibody and is conjugated to a detectable label.

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For oligonucleotide-based kits, the kit can comprise, for example: (1) an oligonucleotide, *e.g.*, a detectably labeled oligonucleotide, which hybridizes to a nucleic acid sequence encoding a polypeptide corresponding to a marker of the invention or (2) a pair of primers useful for amplifying a nucleic acid molecule corresponding to a marker of the invention. The kit can also comprise, *e.g.*, a buffering agent, a preservative, or a protein stabilizing agent. The kit can further comprise components necessary for detecting the detectable label (*e.g.*, an enzyme or a substrate). The kit can also contain a control sample or a series of control samples which can be assayed and compared to the test sample. Each component of the kit can be enclosed within an individual container and all of the various containers can be within a single package, along with instructions for interpreting the results of the assays performed using the kit.

B. Pharmacogenomics

Agents or modulators which have a stimulatory or inhibitory effect on expression of a marker of the invention can be administered to individuals to treat (prophylactically or therapeutically) breast cancer in the patient. In conjunction with such treatment, the pharmacogenomics (*i.e.*, the study of the relationship between an individual's genotype and that individual's response to a foreign compound or drug) of the individual may be considered. Differences in metabolism of therapeutics can lead to severe toxicity or therapeutic failure by altering the relation between dose and blood concentration of the pharmacologically active drug. Thus, the pharmacogenomics of the individual permits the selection of effective agents (*e.g.*, drugs) for prophylactic or therapeutic treatments based on a consideration of the individual's genotype. Such pharmacogenomics can further be used to determine appropriate dosages and therapeutic regimens. Accordingly, the level of expression of a marker of the invention in an individual can be determined to thereby select appropriate agent(s) for therapeutic or prophylactic treatment of the individual.

Pharmacogenomics deals with clinically significant variations in the response to drugs due to altered drug disposition and abnormal action in affected persons. See, *e.g.*, Linder (1997) *Clin. Chem.* 43(2):254-266. In general, two types of pharmacogenetic conditions can be differentiated. Genetic conditions transmitted as a single factor altering the way drugs act on the body are referred to as "altered drug action." Genetic

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conditions transmitted as single factors altering the way the body acts on drugs are referred to as "altered drug metabolism". These pharmacogenetic conditions can occur either as rare defects or as polymorphisms. For example, glucose-6-phosphate dehydrogenase (G6PD) deficiency is a common inherited enzymopathy in which the
5 main clinical complication is hemolysis after ingestion of oxidant drugs (anti-malarials, sulfonamides, analgesics, nitrofurans) and consumption of fava beans.

As an illustrative embodiment, the activity of drug metabolizing enzymes is a major determinant of both the intensity and duration of drug action. The discovery of genetic polymorphisms of drug metabolizing enzymes (*e.g.*, N-acetyltransferase 2 (NAT
10 2) and cytochrome P450 enzymes CYP2D6 and CYP2C19) has provided an explanation as to why some patients do not obtain the expected drug effects or show exaggerated drug response and serious toxicity after taking the standard and safe dose of a drug. These polymorphisms are expressed in two phenotypes in the population, the extensive metabolizer (EM) and poor metabolizer (PM). The prevalence of PM is different among
15 different populations. For example, the gene coding for CYP2D6 is highly polymorphic and several mutations have been identified in PM, which all lead to the absence of functional CYP2D6. Poor metabolizers of CYP2D6 and CYP2C19 quite frequently experience exaggerated drug response and side effects when they receive standard doses. If a metabolite is the active therapeutic moiety, a PM will show no therapeutic
20 response, as demonstrated for the analgesic effect of codeine mediated by its CYP2D6-formed metabolite morphine. The other extreme are the so called ultra-rapid metabolizers who do not respond to standard doses. Recently, the molecular basis of ultra-rapid metabolism has been identified to be due to CYP2D6 gene amplification.

Thus, the level of expression of a marker of the invention in an individual can be
25 determined to thereby select appropriate agent(s) for therapeutic or prophylactic treatment of the individual. In addition, pharmacogenetic studies can be used to apply genotyping of polymorphic alleles encoding drug-metabolizing enzymes to the identification of an individual's drug responsiveness phenotype. This knowledge, when applied to dosing or drug selection, can avoid adverse reactions or therapeutic failure
30 and thus enhance therapeutic or prophylactic efficiency when treating a subject with a modulator of expression of a marker of the invention.

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This invention also provides a process for preparing a database comprising at least one of the markers set forth in Tables 1-21. For example, the polynucleotide sequences are stored in a digital storage medium such that a data processing system for standardized representation of the genes that identify a breast cancer cell is compiled.

- 5 The data processing system is useful to analyze gene expression between two cells by first selecting a cell suspected of being of a neoplastic phenotype or genotype and then isolating polynucleotides from the cell. The isolated polynucleotides are sequenced. The sequences from the sample are compared with the sequence(s) present in the database using homology search techniques. Greater than 90%, more preferably greater
- 10 than 95% and more preferably, greater than or equal to 97% sequence identity between the test sequence and the polynucleotides of the present invention is a positive indication that the polynucleotide has been isolated from a breast cancer cell as defined above.

- In an alternative embodiment, the polynucleotides of this invention are sequenced and the information regarding sequence and in some embodiments, relative
- 15 expression, is stored in any functionally relevant program, e.g., in Compare Report using the SAGE software (available through Dr. Ken Kinzler at John Hopkins University). The Compare Report provides a tabulation of the polynucleotide sequences and their abundance for the samples normalized to a defined number of polynucleotides per library (say 25,000). This is then imported into MS-ACCESS either directly or via
- 20 copying the data into an Excel spreadsheet first and then from there into MS-ACCESS for additional manipulations. Other programs such as SYBASE or Oracle that permit the comparison of polynucleotide numbers could be used as alternatives to MS-ACCESS. Enhancements to the software can be designed to incorporate these additional functions. These functions consist in standard Boolean, algebraic, and text search
- 25 operations, applied in various combinations to reduce a large input set of polynucleotides to a manageable subset of a polynucleotide of specifically defined interest.

- One skilled in the art may create groups containing one or more project(s) by combining the counts of specific polynucleotides within a group (e.g., $\text{GroupNormal} =$
- 30 $\text{Normal1} + \text{Normal2}$, $\text{GroupTumor1} + \text{TumorCellLine}$). Additional characteristic values are also calculated for each tag in the group (e.g., average count, minimum count, maximum count). One skilled in the art may calculate individual tag count ratios

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between groups, for example the ratio of the average GroupNormal count to the average GroupTumor count for each polynucleotide. A statistical measure of the significance of observed differences in tag counts between groups may be calculated.

5 C. Monitoring Clinical Trials

Monitoring the influence of agents (*e.g.*, drug compounds) on the level of expression of a marker of the invention can be applied not only in basic drug screening, but also in clinical trials. For example, the effectiveness of an agent to affect marker expression can be monitored in clinical trials of subjects receiving treatment for breast
10 cancer. In a preferred embodiment, the present invention provides a method for monitoring the effectiveness of treatment of a subject with an agent (*e.g.*, an agonist, antagonist, peptidomimetic, protein, peptide, nucleic acid, small molecule, or other drug candidate) comprising the steps of (i) obtaining a pre-administration sample from a subject prior to administration of the agent; (ii) detecting the level of expression of one
15 or more selected markers of the invention in the pre-administration sample; (iii) obtaining one or more post-administration samples from the subject; (iv) detecting the level of expression of the marker(s) in the post-administration samples; (v) comparing the level of expression of the marker(s) in the pre-administration sample with the level of expression of the marker(s) in the post-administration sample or samples; and (vi)
20 altering the administration of the agent to the subject accordingly. For example, increased administration of the agent can be desirable to increase expression of the marker(s) to higher levels than detected, *i.e.*, to increase the effectiveness of the agent. Alternatively, decreased administration of the agent can be desirable to decrease expression of the marker(s) to lower levels than detected, *i.e.*, to decrease the
25 effectiveness of the agent.

D. Surrogate Markers

The markers of the invention may serve as surrogate markers for one or more disorders or disease states or for conditions leading up to disease states, and in
30 particular, breast cancer. As used herein, a "surrogate marker" is an objective biochemical marker which correlates with the absence or presence of a disease or disorder, or with the progression of a disease or disorder (*e.g.*, with the presence or

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absence of a tumor). The presence or quantity of such markers is independent of the disease. Therefore, these markers may serve to indicate whether a particular course of treatment is effective in lessening a disease state or disorder. Surrogate markers are of particular use when the presence or extent of a disease state or disorder is difficult to assess through standard methodologies (e.g., early stage tumors), or when an assessment of disease progression is desired before a potentially dangerous clinical endpoint is reached (e.g., an assessment of cardiovascular disease may be made using cholesterol levels as a surrogate marker, and an analysis of HIV infection may be made using HIV RNA levels as a surrogate marker, well in advance of the undesirable clinical outcomes of myocardial infarction or fully-developed AIDS). Examples of the use of surrogate markers in the art include: Koomen *et al.* (2000) *J. Mass. Spectrom.* 35: 258-264; and James (1994) *AIDS Treatment News Archive* 209.

The markers of the invention are also useful as pharmacodynamic markers. As used herein, a "pharmacodynamic marker" is an objective biochemical marker which correlates specifically with drug effects. The presence or quantity of a pharmacodynamic marker is not related to the disease state or disorder for which the drug is being administered; therefore, the presence or quantity of the marker is indicative of the presence or activity of the drug in a subject. For example, a pharmacodynamic marker may be indicative of the concentration of the drug in a biological tissue, in that the marker is either expressed or transcribed or not expressed or transcribed in that tissue in relationship to the level of the drug. In this fashion, the distribution or uptake of the drug may be monitored by the pharmacodynamic marker. Similarly, the presence or quantity of the pharmacodynamic marker may be related to the presence or quantity of the metabolic product of a drug, such that the presence or quantity of the marker is indicative of the relative breakdown rate of the drug *in vivo*. Pharmacodynamic markers are of particular use in increasing the sensitivity of detection of drug effects, particularly when the drug is administered in low doses. Since even a small amount of a drug may be sufficient to activate multiple rounds of marker transcription or expression, the amplified marker may be in a quantity which is more readily detectable than the drug itself. Also, the marker may be more easily detected due to the nature of the marker itself; for example, using the methods described herein, antibodies may be employed in an immune-based detection system for a protein marker,

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or marker-specific radiolabeled probes may be used to detect a mRNA marker. Furthermore, the use of a pharmacodynamic marker may offer mechanism-based prediction of risk due to drug treatment beyond the range of possible direct observations. Examples of the use of pharmacodynamic markers in the art include:

- 5 Matsuda *et al.* US 6,033,862; Hattis *et al.* (1991) *Env. Health Perspect.* 90: 229-238; Schentag (1999) *Am. J. Health-Syst. Pharm.* 56 Suppl. 3: S21-S24; and Nicolau (1999) *Am. J. Health-Syst. Pharm.* 56 Suppl. 3: S16-S20.

The markers of the invention are also useful as pharmacogenomic markers. As used herein, a "pharmacogenomic marker" is an objective biochemical marker which
10 correlates with a specific clinical drug response or susceptibility in a subject (see, e.g., McLeod *et al.* (1999) *Eur. J. Cancer* 35(12): 1650-1652). The presence or quantity of the pharmacogenomic marker is related to the predicted response of the subject to a specific drug or class of drugs prior to administration of the drug. By assessing the presence or quantity of one or more pharmacogenomic markers in a subject, a drug
15 therapy which is most appropriate for the subject, or which is predicted to have a greater degree of success, may be selected. For example, based on the presence or quantity of RNA or protein for specific tumor markers in a subject, a drug or course of treatment may be selected that is optimized for the treatment of the specific tumor likely to be present in the subject. Similarly, the presence or absence of a specific sequence
20 mutation in marker DNA may correlate with drug response. The use of pharmacogenomic markers therefore permits the application of the most appropriate treatment for each subject without having to administer the therapy.

VII. Experimental Protocol

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A. Subtracted Libraries and Transcript Profiling

Subtracted libraries are generated using a PCR based method that allows the isolation of clones expressed at higher levels in one population of mRNA (tester) compared to another population (driver). Both tester and driver mRNA populations are
30 converted into cDNA by reverse transcription, and then PCR amplified using the SMART PCR kit from Clontech. Tester and driver cDNAs are then hybridized using the PCR-Select cDNA subtraction kit from Clontech. This technique results in both

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subtraction and normalization, which is an equalization of copy number of low-abundance and high-abundance sequences. After generation of the subtractive libraries, a group of 96 or more clones from each library is tested to confirm differential expression by reverse Southern hybridization.

5 For the markers of the invention identified through the above-described subtractive library hybridization technique, the "tester" source for the subtracted libraries was comprised of cDNA generated from either tissue samples from three types of breast cancer (obtained from human patients), or from breast cancer cell lines. The "driver" source for the subtracted libraries was comprised of cDNA generated from non-
10 cancerous breast tissue cells.

For transcript profiling, nylon arrays are prepared by spotting purified PCR product onto a nylon membrane using a robotic gridding system linked to a sample database. Several thousand clones are spotted on each nylon filter.

RNA or DNA from clinical samples (tumor and normal) and cell lines are used
15 for hybridization against the nylon arrays. The RNA or DNA is labeled utilizing an *in vitro* reverse transcription reaction that contains a radiolabeled nucleotide that is incorporated during the reaction. Alternatively, mRNA is converted into cDNA by reverse transcription, and then PCR amplified using the SMART PCR kit from Clontech. Hybridization experiments are carried out by combining labeled RNA or
20 DNA samples with nylon filters in a hybridization chamber. Duplicate, independent hybridization experiments are performed to generate transcriptional profiling data. See, *Nature Genetics*, 21 (1999). Amplified cDNA is then radiolabelled using random priming with PRIME IT from Stratagene.

25 B. Proteomics

Proteins that are secreted by normal and transformed cells in culture are analyzed to identify those proteins that are likely to be secreted by cancerous cells into body fluids. Supernatants are isolated and MWT-CO filters are used to simplify the mixture of proteins. The proteins are then digested with trypsin. The tryptic peptides are loaded
30 onto a microcapillary HPLC column where they are separated, and eluted directly into an ion trap mass spectrometer, through a custom-made electrospray ionization source. Throughout the gradient, sequence data is acquired through fragmentation of the four

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most intense ions (peptides) that elute off the column, while dynamically excluding those that have already been fragmented. In this way, approximately 2000 scans worth of sequence data are obtained, corresponding to approximately 50 to 200 different proteins in the sample. These data are searched against databases using correlation analysis tools, such as MS-Tag, to identify the proteins in the supernatants.

VIII. Summary Of The Data Provided In The Tables

The level of expression of numerous potential markers (*i.e.* "the markers of the invention") was measured in cells obtained from breast cancer tissue samples obtained from fifteen patients afflicted with breast cancer and from eleven breast cancer cell cultures. The fifteen cancer tissue samples include: (i) five invasive lobular carcinomas (ILC), (ii) five invasive ductal carcinomas (IDC), and (iii) five samples of ductal carcinoma *in situ* (DCIS). These tissue and cell line measurements were assessed based on comparison with expression levels of each marker in corresponding non-cancerous breast tissue and cell cultures. Markers which display significantly higher levels of expression in cancer-related samples than in non-cancerous samples are listed in Tables 1-8. As an additional evaluation of ability to indicate breast cancer, individual markers that were identified by transcriptional profiling criteria mentioned above were also tested in six different subtracted library experiments. These subtracted libraries consisted of:

- (i) a pool of metastatic cells harvested from the ascites or pleural fluid of three breast cancer patients subtracted against a pool of non-cancerous HMECs (human mammary epithelial cells) from three healthy donors,
- (ii) a pool of metastatic cells harvested from the ascites or pleural fluid of two patients subtracted against a non-cancerous HMECs from one healthy donor,
- (iii) a pool of five ILC tissue samples subtracted against a pool of five normal breast epithelia,
- (iv) the breast cancer cell line ZR-75 subtracted against a single HMEC sample,

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- (v) the breast cancer cell line MCF7 subtracted against a single HMEC sample, and
- (vi) the breast cancer cell line MDA-MB-231 subtracted against a single HMEC sample.

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Table 8 lists the markers identified by the above-described subtractive library experiments.

Markers of the present invention were also identified from cells obtained from breast cancer tissues exhibiting varying clinical outcomes and degrees of aggressiveness. Table 9 lists the markers that were identified by subtractive library experiments and Tables 10-17 lists the markers that were identified through transcriptional profiling experiments.

In addition, protein profiling experiments were undertaken to assess whether the proteins associated with the expression of individual markers of the invention are secreted. Transcriptional profiling experiments were performed on fractions of RNA that were obtained from either (a) endoplasmic reticulum-associated (ER-associated) ribosomes, or (b) free ribosomes. Eukaryotic RNA which is isolated from ER-associated ribosomes tends to encode secreted and membrane bound proteins rather than intracellular proteins. Accordingly, markers of the invention which exhibit significantly enhanced expression in fractions of RNA from ER-associated ribosomes (in comparison with RNA from free ribosomes) are predicted to be associated with secreted proteins.

Table 1 lists 2072 markers, expression of which was increased by at least five-fold in at least:

- (i) one of eleven breast cancer cell cultures tested, relative to its expression in six normal (*i.e.* non-cancerous) human epithelial mammary cell lines (HMEC); or
- (ii) one of fifteen different breast cancer tissue samples relative to expression in seven normal breast tissue samples.

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The fifteen cancer tissue samples include: (i) five invasive lobular carcinomas (ILC), (ii) five invasive ductal carcinomas (IDC), and (iii) five samples of ductal carcinoma *in situ* (DCIS).

Table 2 lists 214 markers, expression of which was increased by at least 5-fold in at least 3 of the 11 breast cancer cell cultures relative to its expression in normal (i.e. non-cancerous) mammary epithelial cell lines.

Table 3 lists 207 markers, expression of which was increased by at least 2-fold in at least 3 of the 5 ILC breast cancer tissue samples relative to its expression in seven non-cancerous breast tissue samples.

Table 4 lists 672 markers, expression of which was increased by at least 2-fold in at least 3 of the 5 IDC breast cancer tissue samples relative to its expression in seven non-cancerous breast tissue samples.

Table 5 lists 794 markers, expression of which was increased by at least 2-fold in at least 3 of the 5 DCIS breast cancer tissue samples relative to its expression in seven non-cancerous breast tissue samples.

Table 6 lists 478 markers, expression of which was

- (i) increased by at least 10-fold in at least 1 of the 11 breast cancer cell cultures and which are predicted or known to code for products that are secreted based upon protein profiling analysis, sequence analysis and/or literature references, or
- (ii) expression of which was increased at least 5-fold in 1 of the 15 breast cancer tissue samples and which are predicted or known to code for products that are secreted based upon protein profiling analysis, sequence analysis and/or literature references.

Table 7 lists 8 preferred markers, expression of which was increased by at least 4.5 fold in one of the three types of breast cancer tissue samples used (ILC, IDC, and DCIS), and which are predicted or known to code for products that are secreted based upon protein profiling analysis, sequence analysis and/or literature references.

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Table 8 lists markers (SEQ ID NOS 1-6540) identified through a subtracted library experiment described herein. The library source for SEQ ID NOS: 1-1773 was breast cancer cell cultures (ascites and pleural fluid cultures) versus HMEC. The library source for SEQ ID NOS: 1774-3012 was breast cancer tissue (ILC) versus breast normal tissue. The library source for SEQ ID NOS: 3013-4982 was breast cancer tissue (IDC) versus breast normal tissue. The library source for SEQ ID NOS: 4983-6540 was breast cancer tissue (DCIS) versus breast normal tissue.

Table 9 lists markers (corresponding to SEQ ID NOS: 1-9340) identified through subtractive library experiments described herein. SEQ ID NOS: 1-6557 and 7958-9185 are preferred. The tester source for SEQ ID NOS: 1-1019, 6558-6596, 7958-7999, and 9186-9187 was aggressive breast tumor cell lines (SKBR-3, HS578T, BT549, MDA321, MDA435) and the driver source was indolent breast tumor cell lines (MCF-7, T47D, ZR75). Markers corresponding to these sequences are upregulated in more aggressive tumors.

The tester source for SEQ ID NOS: 1020-1836, 6597-6635, 8000-8241, and 9188-9200 was indolent breast tumor cell lines (MCF-7, T47D, ZR75) and the driver source was aggressive breast tumor cell lines (SKBR-3, HS578T, BT549, MDA321, MDA435). Markers corresponding to these sequences are upregulated in more indolent tumors.

The tester source for SEQ ID NOS: 1837-3023, 6636-7011, 8242-8317, and 9201-9237 was poor clinical outcome breast tumors and the driver source was good clinical outcome breast tumors. Markers corresponding to these sequences are upregulated in more aggressive tumors. "Poor clinical outcome" is defined as the patient suffering disease recurrence following surgery within a period of less than five years. "Good clinical outcome" is defined as the patient remaining disease free for at least five years or more following surgery.

The tester source for SEQ ID NOS: 3023-3403, 7012-7387, 8318-8329, and 9238-9262 was good clinical outcome breast tumors and the driver source was poor clinical outcome breast tumors. Markers corresponding to these sequences are upregulated in more indolent tumors.

The tester source for SEQ ID NOS 3404-4368, 7388-7617, 8330-8382, and 9263-9289 was breast tumor lymph node metastasis and the driver source was indolent (colloid and tubular) breast tumor samples. Markers corresponding to these sequences are upregulated in more aggressive tumors.

- 5 The tester source for SEQ ID NOS 4369-5300, 7618-7847, 8383-8430, and 9290-9315. was indolent (colloid and tubular) breast tumor samples and the driver source was breast tumor lymph node metastasis. Markers corresponding to these sequences are upregulated in more indolent tumors.

- 10 The tester source for SEQ ID NOS: 5301-5918, 7848-7902, 8431-8846, and 9316-9330 was T1N1 breast tumors (tumors 2.0 cm or less in greatest dimension with regional lymph node metastasis) and the driver source was T1N0 breast tumors (tumors 2.0 cm or less in greatest dimension with no regional lymph node metastasis), good clinical outcome. Markers corresponding to these sequences are upregulated in more aggressive tumors.

- 15 The tester source for SEQ ID NOS: 5919-6557, 7903-7957, 8847-9185, and 9331-9340 was T1N0 breast tumors with good clinical outcome and the driver source was T1N1 breast tumors. Markers corresponding to these sequences are upregulated in more indolent tumors.

- 20 Table 9-1 is a key to the sequences of Table 9 and indicates which sequences were identified from the GenBank, dbEST (a division of GenBank), or NUCPATENT (a GENESEQ database, available through Derwent).

- 25 Tables 10-17 list markers of the present invention that were identified through transcriptional profiling experiments. All markers listed in Tables 10-16 were differentially expressed at least two-fold in at least 25% of the aggressive samples or at least five-fold in at least one aggressive sample.

- 30 Table 10 shows markers differentially expressed in ductal carcinoma in situ samples (DCIS: localized to the duct, more unaggressive) versus infiltrating ductal carcinoma (IDC: infiltrating, more aggressive). Table 11 shows markers differentially expressed in DCIS samples versus infiltrating lobular carcinoma (ILC: infiltrating, more aggressive) samples. Table 12 shows markers differentially expressed in unaggressive cell lines (MCF-7, T47D, ZR75) versus aggressive cell lines (SKBR-3, HS578T, BT549, MDA321, MDA435). Table 13 shows markers differentially expressed in

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indolent (colloid and tubular) breast tumor samples versus distant breast tumor metastasis. Table 14 shows markers differentially expressed in indolent (colloid and tubular) breast tumor samples versus lymph node metastasis. Table 15 shows markers differentially expressed in T1N0 breast tumors versus T1N1 breast tumors. Table 16 shows markers differentially expressed in breast tumors with good clinical outcome versus breast tumors with bad clinical outcome. Table 17 shows 26 markers, expression of which was increased by at least five-fold in at least three of fifteen different breast cancer tissue samples relative to expression in seven normal breast tissue samples. The fifteen cancer tissue samples include: (i) five invasive lobular carcinomas (ILC), (ii) five invasive ductal carcinomas (IDC), and (iii) five samples of ductal carcinoma *in situ* (DCIS).

Table 18 lists 9,429 markers which were identified based on a correlation between the transcription profile of each marker and the transcription profile of one or more of 29 known cancer markers (see Table B, below) which represent genes indicative of cancer in general and/or breast cancer in particular. The transcription profiles of the markers and the known cancer markers were determined in eight cancer cell lines of varying aggressiveness. The correlation coefficients were determined by comparing the transcription profiles (expression patterns) of the known cancer clones in the cancer cell lines to the transcription profiles (expression patterns) of the marker genes in the cancer cell lines. The markers listed in Table 18 are those markers found to have a correlation coefficient which is greater than 0.8 or less than -0.8. The cancer cell lines used in the experiment include the following (listed in order of increasing aggressiveness): MCF-7, T37D, ZR-75, SKBR-3, MDA-435, Hs578-T, BT-549, MDA-231.

Table 19 lists 3,717 markers which were also identified based on a correlation between the transcription profile of the markers and the transcription profile of one or more of the same 29 known cancer markers (see Table B, below). The transcription profiles of each marker and each known cancer marker were determined in one or more samples of 17 different tumors and cancer cell lines, for a total of 68 samples. The correlation coefficients were determined by comparing the transcription profile (expression pattern) of the known cancer markers in the cancer cell lines and tumor samples to the transcription profiles (expression patterns) of the markers in the cancer

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cell lines and tumor samples. The cancer cell lines, tumors, and number of samples analyzed of each are listed below in Table A.

Table A:

Sample type	Number of Samples
Aggressive Breast Cell Line	2
Control RNA (Cell line mix)	2
DCIS	4
Cultured HMEC	3
Cultured HMVEC	1
IDC: no outcome data	6
IDC: > 5 years Disease free survival	5
IDC: < 5 years Disease free survival	5
ILC	5
Indolent Cell Line	5
Indolent tumor: Colloid	4
Indolent tumor: Tubular	3
Distal metastasis from primary breast tumor	4
Matastasis to lymph nodes	6
Normal	7
Cultured normal breast stroma cells	1
T1N1 tumor	5

- 5 The markers listed in Table 19 are those markers found to have a correlation coefficient of at least 0.64.

Table B lists the Clone ID numbers of the 29 known markers.

TABLE B**Clone ID**

812083
360778
342181
46154
241474
193736
251019
774754
264117
345538
713145
841641
324861
725321
139009
236059
824568
626841
147075
845363
197520
714106
487777
378461
810512
24415
141768
840511
812965

Table 20 correlates IMAGE clone ID numbers ("IMAGE ID") from the tables of
5 the present invention, with GenBank accession numbers ("Accession #'s"). Table 21
correlates GenBank accession numbers ("Accession #") with GenBank GI numbers ("GI

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#'s"). One skilled in the art may thus obtain from the Tables, IMAGE clone ID numbers, GenBank accession numbers, as well as the GenBank GI numbers (which are preferred), for a marker of the present invention, thereby identifying the nucleotide and/or polypeptide sequence of that marker.

5 In the Tables, the following definitions apply.

"Accession No." corresponds to the accession number assigned the particular sequence (see, for example <http://www.ncbi.nlm.nih.gov/Entrez/nucleotide.html> for GenBank and www.derwent.com for GENESEQ). All referenced database sequences are expressly incorporated herein by reference.

10 "ID Number" is an arbitrary designation assigned to the marker.

"Image Clone ID", "Clone ID", "Clone", or "Image ID" is the identification number assigned to the marker by the IMAGE Consortium (Lennon *et al.*, 1996, *Genomics* 33:152; see, *e.g.*, "<http://www-bio.llnl.gov/bbrp/image/image.html>" for further information). All referenced Image Clone sequences are expressly incorporated
15 by reference.

"GenBank Accession No.", "Accession #'s", or "Accession #" is the identification number assigned to the marker in the GenBank database (see, *e.g.* "http://www.ncbi.nlm.nih.gov/genbank/query_form.html" for further information). "GI #" is the GI identification number assigned to the marker in the GenBank database
20 (see *supra*). All referenced database sequences are expressly incorporated herein by reference.

"Cluster ID" corresponds to the cluster that the particular sequence has been assigned according to the UniGene database at NCBI (see, for example <http://www.ncbi.nlm.nih.gov/UniGene/index.html>).

25 "Secretion Predicted?" indicates whether the protein corresponding to the marker is predicted to be secreted or membrane bound based on protein profiling analysis.

"Known Secretion?" indicates whether the protein corresponding to the marker is known to be secreted based on information from literature, the GenBank entry, the UniGene database, and/or the IMAGE consortium database.

30 "Number of Subtracted Libraries (out of 6) where clone was found" indicates the number of subtracted library experiments (out of the six described above) where a particular marker of the invention was also found.

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"Expression Ratio (Cancer/Normal)" indicates the ratio (or "fold-induction") of elevated expression for a particular marker in a breast cancer sample or cell culture, over the background in non-cancerous sample or cell line.

5 "% Tumors" refers to the percentage of tumors in which the markers were found to be expressed.

 "Up/Down" refers to whether the marker was up-regulated or down-regulated.

 "Max Fold # Tumors": "Max Fold" refers to the maximum fold change in expression observed in at least one tumor sample compared to unaggressive. "# Tumors" refers to the number of tumors that meet this maximum fold expression
10 threshold.

 "Fold Max # Tumors": "Fold" refers to the maximum fold change in expression that is consistent across all tumors that meet the selection criteria. "'Max # Tumors" refers to the number of tumors that meet the selection criteria. The selection criteria are that a marker must be differentially expressed at least two-fold ("Fold" must be greater
15 than or equal to two) in at least 25% of the aggressive tumors. ("Max # Tumors" must be greater than or equal to 25% of the number of aggressive tumors).

 The contents of all references, patents, published patent applications, and GenBank and IMAGE consortium database records cited throughout this application are hereby incorporated by reference.

20

Other Embodiments

 Those skilled in the art will recognize, or be able to ascertain using no more than routine experimentation, many equivalents to the specific embodiments of the invention described herein. Such equivalents are intended to be encompassed by the following
25 claims.

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What is claimed is:

Claims

1. A method of assessing whether a patient is afflicted with breast
5 cancer, the method comprising comparing:
 - a) the level of expression of a marker in a patient sample, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21, and
 - b) the normal level of expression of the marker in a control non-breast cancer sample,
- 10 wherein a significant difference between the level of expression of the marker in the patient sample and the normal level is an indication that the patient is afflicted with breast cancer.
2. The method of claim 1, wherein the marker is selected from the group
15 consisting of the markers listed in Tables 2-5 and 8-9.
3. The method of claim 1, wherein the marker is selected from the group consisting of the markers listed in Tables 6 and 7.
- 20 4. The method of either of claims 1 or 3, wherein the marker corresponds to a secreted protein.
5. The method of claim 1, wherein the marker corresponds to a transcribed polynucleotide or portion thereof, wherein the polynucleotide comprises the
25 marker.
6. The method of claim 1, wherein at least one tissue corresponding to the marker in the Tables is a breast tissue.
- 30 7. The method of claim 1, wherein the marker is not significantly expressed in non-breast tissues.

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8. The method of claim 1, wherein the patient sample is a breast-associated body fluid.

9. The method of claim 8, wherein the breast-associated body fluid is
5 selected from the group consisting of blood fluid, lymph, ascitic fluid, cystic fluid, urine, a breast exudate and a nipple aspirate.

10. The method of claim 1, wherein the sample comprises cells obtained
from the patient.

10

11. The method of claim 10, wherein the cells are in a fluid selected
from the group consisting of a uterine fluid, a cystic fluid, breast exudate and a nipple
aspirate.

15

12. The method of either of claims 1 or 3, wherein the level of
expression of the marker in the sample is assessed by detecting the presence in the
sample of a protein corresponding to the marker.

20

13. The method of claim 12, wherein the presence of the protein is
detected using a reagent which specifically binds with the protein.

14. The method of claim 13, wherein the reagent is selected from the
group consisting of an antibody, an antibody derivative, and an antibody fragment.

25

15. The method of claim 1, wherein the level of expression of the marker
in the sample is assessed by detecting the presence in the sample of a transcribed
polynucleotide or portion thereof, wherein the transcribed polynucleotide comprises the
marker.

30

16. The method of claim 15, wherein the transcribed polynucleotide is an
mRNA.

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17. The method of claim 15, wherein the transcribed polynucleotide is a cDNA.

18. The method of claim 15, wherein the step of detecting further
5 comprises amplifying the transcribed polynucleotide.

19. The method of claim 1, wherein the level of expression of the marker in the sample is assessed by detecting the presence in the sample of a transcribed polynucleotide which anneals with the marker or anneals with a portion of a
10 polynucleotide wherein the polynucleotide comprises the marker, under stringent hybridization conditions.

20. The method of claim 1, wherein the level of expression of the marker in the sample differs from the normal level of expression of the marker in a patient not
15 afflicted with breast cancer by a factor of at least about 2.

21. The method of claim 1, wherein the level of expression of the marker in the sample differs from the normal level of expression of the marker in a patient not afflicted with breast cancer by a factor of at least about 5.
20

22. The method of claim 1, comprising comparing:
a) the level of expression in the sample of each of a plurality of markers independently selected from the markers listed in Tables 1-21, and
b) the normal level of expression of each of the plurality of markers in
25 samples of the same type obtained from control humans not afflicted with breast cancer, wherein the level of expression of more than one of the markers is significantly altered, relative to the corresponding normal levels of expression of the markers, is an indication that the patient is afflicted with breast cancer.

23. The method of claim 22, wherein the level of expression of each of the markers is significantly altered, relative to the corresponding normal levels of expression of the markers, is an indication that the patient is afflicted with breast cancer.
30

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24. The method of claim 22, wherein the plurality comprises at least three of the markers.

25. The method of claim 22, wherein the plurality comprises at least five
5 of the markers.

26. A method for monitoring the progression of breast cancer in a patient, the method comprising:

a) detecting in a patient sample at a first point in time, the expression of a
10 marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21;

b) repeating step a) at a subsequent point in time; and

c) comparing the level of expression detected in steps a) and b), and therefrom monitoring the progression of breast cancer in the patient.

15

27. The method of claim 26, wherein the marker is selected from the group consisting of the markers listed in Tables 2-5 and 8-9.

28. The method of claim 26, wherein the marker is selected from the
20 group consisting of the markers listed in Tables 6 and 7.

29. The method of claim 26, wherein the marker corresponds to a secreted protein.

25 30. The method of claim 26, wherein marker corresponds to a transcribed polynucleotide or portion thereof, wherein the polynucleotide comprises the marker.

31. The method of claim 26, wherein the patient sample is an breast-
30 associated body fluid.

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32. The method of claim 26, wherein the sample comprises cells obtained from the patient.

33. The method of claim 26, wherein between the first point in time and the subsequent point in time, the patient has undergone surgery to remove a tumor.

34. A method of assessing the efficacy of a test compound for inhibiting an breast cancer in a patient, the method comprising comparing:

- a) expression of a marker in a first sample obtained from the patient and maintained in the presence of the test compound, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21, and
 - b) expression of the marker in a second sample obtained from the patient and maintained in the absence of the test compound,
- wherein a significantly altered level of expression of the marker in the first sample, relative to the second sample, is an indication that the test compound is efficacious for inhibiting breast cancer in the patient.

35. The method of claim 34, wherein the first and second samples are portions of a single sample obtained from the patient.

36. A method of assessing the efficacy of a therapy for inhibiting breast cancer in a patient, the method comprising comparing:

- a) expression of a marker in the first sample obtained from the patient prior to providing at least a portion of the therapy to the patient, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21, and
 - b) expression of the marker in a second sample obtained from the patient following provision of the portion of the therapy,
- wherein a significantly altered level of expression of the marker in the second sample, relative to the first sample, is an indication that the therapy is efficacious for inhibiting breast cancer in the patient.

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37. A method of selecting a composition for inhibiting breast cancer in a patient, the method comprising:

- a) obtaining a sample comprising cancer cells from the patient;
- b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;
- c) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21; and
- d) selecting one of the test compositions which induces an altered level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

38. A method of inhibiting breast cancer in a patient, the method comprising:

- a) obtaining a sample comprising cancer cells from the patient;
- b) separately maintaining aliquots of the sample in the presence of a plurality of test compositions;
- c) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21; and
- d) administering to the patient at least one of the test compositions which induces an altered level of expression of the marker in the aliquot containing that test composition, relative to other test compositions.

39. A kit for assessing the suitability of each of a plurality of compounds for inhibiting breast cancer in a patient, the kit comprising:

- a) the plurality of compounds; and
- b) a reagent for assessing expression of a marker selected from the group consisting of the markers listed in Tables 1-21.

40. A kit for assessing whether a patient is afflicted with breast cancer, the kit comprising reagents for assessing expression of a marker selected from the group consisting of the markers listed in Tables 1-21.

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41. A method of making an isolated hybridoma which produces an antibody useful for assessing whether a patient is afflicted with breast cancer, the method comprising:

- 5 isolating a protein corresponding to a marker selected from the group consisting of the markers listed in Tables 1-21;
immunizing a mammal using the isolated protein;
isolating splenocytes from the immunized mammal;
fusing the isolated splenocytes with an immortalized cell line to form hybridomas; and
10 screening individual hybridomas for production of an antibody which specifically binds with the protein to isolate the hybridoma.

42. An antibody produced by a hybridoma made by the method of claim 41.

15

43. A kit for assessing the presence of human breast cancer cells, the kit comprising an antibody, wherein the antibody specifically binds with a protein corresponding to a marker selected from the group consisting of the markers listed in Tables 1-21.

20

44. A kit for assessing the presence of breast cancer cells, the kit comprising a nucleic acid probe wherein the probe specifically binds with a transcribed polynucleotide corresponding to a marker selected from the group consisting of the markers listed in Tables 1-21.

25

45. A method of assessing the breast cell carcinogenic potential of a test compound, the method comprising:

- a) maintaining separate aliquots of breast cells in the presence and absence of the test compound; and
30 b) comparing expression of a marker in each of the aliquots, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21,

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wherein a significantly altered level of expression of the marker in the aliquot maintained in the presence of the test compound, relative to the aliquot maintained in the absence of the test compound, is an indication that the test compound possesses human breast cell carcinogenic potential.

5

46. A kit for assessing the breast cell carcinogenic potential of a test compound, the kit comprising breast cells and a reagent for assessing expression of a marker, wherein the marker is selected from the group consisting of the markers listed in Tables 1-21.

10

47. A method of treating a patient afflicted with breast cancer, the method comprising providing to cells of the cancer a protein corresponding to a marker selected from the markers listed in Tables 1-21.

15

48. The method of claim 47, wherein the protein is provided to the cells by providing a vector comprising a polynucleotide encoding the protein to the cells.

49. A method of treating a patient afflicted with breast cancer, the method comprising providing to cells of the patient an antisense oligonucleotide complementary to a polynucleotide corresponding to a marker selected from the markers listed in Tables 1-8.

20

50. A method of inhibiting breast cancer in a patient at risk for developing breast cancer, the method comprising inhibiting expression of a gene corresponding to a marker selected from the markers listed in Tables 1-8.

25

51. A system for identifying selected polynucleotide records that identify a breast cancer cell, the system comprising:

a digital computer;

30

a database coupled to the computer;

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a database coupled to the database server having data stored therein, the data comprising records of data comprising a polynucleotide corresponding to a marker from the markers in Table 1-21; and

- 5 a code mechanism for applying queries based upon a desired selection criteria to the data file in the database to produce reports of polynucleotide records which match the desired selection criteria.

52. A method for detecting a breast cancer cell, using a computer having a processor, memory, display, and input/output devices, the method comprising the steps
10 of:

- a) providing a sequence of a polynucleotide isolated from a sample suspected of containing a breast cancer cell;
- b) providing a database comprising records of data comprising a polynucleotide corresponding to a marker from the markers in Tables 1-21; and
- 15 c) using a code mechanism for applying queries based upon a desired selection criteria to the data file in the database to produce reports of polynucleotide records of step a) which provide a match of the desired selection criteria of the sequences in the database of step b), the presence of a match being a positive indication that the polynucleotide of step 1) has been isolated from a cell that is a breast
20 cancer cell.

Table 1

Image Clone ID	GenBank Accession No.	Cluster Number	Number of subtracted libraries (out of six) where clone was found	Secretion Predicted?	Known Secretion?	Expression Ratio (Cancer / Normal)
205633	P13236	Hs.75703	0	Y	Y	5.605327066
768561	P13500	Hs.340	0	Y		286.4926191
129865	D84212	Hs.199147	3			7.404433446
123730	Y11215	Hs.19126	0			5.173052086
206994	AJ001306	Hs.151310	0			9.696957923
159455	U60844	Hs.74573	0	Y		8.619687807
78629	P30991	Hs.89414	0			6.897477556
183337	P28067	Hs.77522	5	Y		67.28736124
789369		Hs.34853	0			13.39881394
564803	U74612	Hs.239	0			5.696796066
82991	P22413	Hs.11951	0	Y		6.79625083
768638		Hs.182575	0	Y		137.7559104
125134	P09326	Hs.901	0			8.374341771
191664		Hs.108623	1	Y	Y	31.32956579
725677	Q07002	Hs.2994	0	Y		9.679493665
630013	P43246	Hs.78934	1			5.695529233
341706		Hs.16236	0			7.450811067
309894	AB000520	Hs.15744	0	Y		5.225584561
296444		Hs.18376	0	Y		5.448550496
141768	P04626	Hs.173884	0	Y		67.98243565
269815	P08478	Hs.197458	0		Y	8.799295204
795159	Q16293	Hs.194848	0			7.138068702
327676	P19012	Hs.74070	2			5.381450419
133273	Q01453	Hs.103724	2			11.20134388
768324	Q15008	Hs.23488	3			6.104575025
753313	Q13571	Hs.79356	0			9.846487163
770086	P42895	Hs.13421	0	Y		5.745937951

Table I

210415	Q13009	Hs.82141	0	5.982933487
244767		Hs.1192	0	7.161048322
823686	P09914	Hs.20315	1	6.41499208
153411	P01903	Hs.76807	3	228.6434285
770670	P21580	Hs.199136	1	5.246080598
256664		Hs.147087	0	6.527069074
44351	P10911	Hs.89543	0	5.301379945
68317	P18403	Hs.7644	0	5.886773946
759948	P04271	Hs.83384	0	45.81922715
231674	AF000561	Hs.104640	0	8.445358441
49164	P19320	Hs.109225	5	76.52720667
243638		Hs.33384	0	7.214091912
193892		Hs.137478	0	5.70016821
127486		Hs.21798	0	8.110219031
295973	AB023183	Hs.52463	0	8.134691562
196860		Hs.191254	0	6.483289986
321580	AC004131	Hs.154050	1	9.996598863
233349		Hs.13684	0	7.410820487
141230		Hs.141883	0	5.82002932
768344		Hs.198106	0	14.53747016
503737		Hs.13094	1	5.389585793
52096		Hs.74615	2	77.41943316
782718	A27270	Hs.21922	2	6.547398047
824659	Q05084	Hs.167927	0	8.282465815
247635		Hs.92071	0	8.545202242
324225	AF060228	Hs.17466	5	8.99083932
85450	X95190	Hs.9795	0	17.12400225
240674		Hs.41380	0	5.682727113
299815		Hs.72805	2	5.618194512
755145	P15311	Hs.155191	0	11.29235381
381166		Hs.27590	1	6.693252657
753418		Hs.93183	0	6.641096436
752557	U89336	Hs.11689	0	8.501334909
44477	P19320	Hs.109225	5	38.41555764
182661	P37023	Hs.172670	5	8.294893701

Table I

767765	P55040	Hs.79022	0	8.738299529
727026		Hs.27916	0	5.133248289
135221	P25815	Hs.2982	2	31.68559333
798646	P11926	Hs.75212	1	6.17301436
66322	P09693	Hs.2259	0	5.696943207
770212	P36222	Hs.75184	1	17.94005964
841332	P52566	Hs.83656	2	25.03392513
86220	P48775	Hs.183671	0	7.757138374
150466	P29474	Hs.166373	0	41.73178316
262231	P27797		1	5.278271439
33045	P25929	Hs.154837	1	82.16345161
83231		Hs.1360	1	6.228863979
546600	U40992	Hs.7602	0	7.190537279
140337		Hs.22370	0	10.14956178
121625		Hs.188497	0	9.048182508
293569		Hs.16769	0	5.21014495
122364		Hs.200538	0	5.451155544
133096	D50406	Hs.29640	3	6.294360543
196148		Hs.14478	0	6.043204827
154312		Hs.168386	0	6.486743084
133303		Hs.27695	0	8.514560176
306806		Hs.7988	0	5.143095714
245986		Hs.221197	1	5.308896673
782217	U82535	Hs.227511	0	5.431569582
219976	P00519	Hs.143336	0	12.94003585
121621	Q00839	Hs.103804	1	5.869028905
795468	P08910	Hs.98364	0	5.654170394
811740		Hs.1142	0	6.93413084
120189	P06731	Hs.173609	0	28.12068798
265680	Y07593	Hs.199112	2	5.706307428
823851	AF053944	Hs.118397	0	13.43023004
363086	P12532	Hs.153998	1	5.594294294
289818	Q02252	Hs.170008	0	12.80394098
119882	P02679	Hs.75431	0	10.00142899
843321	P05787	Hs.23881	0	5.097161034

Table 1

825577	X80198	Hs.77628	0			5.287371988
781510	U65092	Hs.40403	0	Y		6.051012987
325070		Hs.94667	0	Y		7.812486846
783729	P04626	Hs.173664	0			35.06733254
526184	D42087	Hs.184627	0			18.45949352
811870	O43237	Hs.194625	1			5.363435212
825296	Q14746	Hs.82399	0	Y		5.720995286
714106		Hs.77274	1	Y	Y	8.060136216
503617	Q07325	Hs.77367	0	Y	Y	18.16657553
263200	D29810	Hs.153445	0	Y		5.318935359
782811	P10910	Hs.139800	0			5.310337192
786675	Q14508	Hs.2719	0	Y		8.628533382
342640	Q14012	Hs.81892	2			8.847051707
244147	P49241	Hs.821	3			6.360387191
126522		Hs.33063	0	Y		7.039165523
140301		Hs.28792	1	Y		13.7812527
110582		Hs.15081	0	Y		14.20501468
144951	P51522	Hs.23240	0	Y		5.097229032
139354		Hs.15093	0	Y		11.02125306
110198	AF129112	Hs.13820	0			21.05672654
137885		Hs.159797	0	Y		7.756496817
294221		Hs.221392	0			5.044082219
39874	U89916	Hs.26126	0			5.887922113
418185		Hs.96413	0			5.826781586
193938		Hs.207865	0	Y		13.00174721
274578		Hs.51957	0			6.373840842
365655		Hs.61311	0		Y	10.47087894
265694			0	Y		9.459083855
796229		Hs.13991	0	Y		6.201581243
67067		Hs.94785	0	Y		11.67949842
429466	AJ002305	Hs.6139	0	Y		13.21937668
795803		Hs.109706	1			7.097982079
782766	AF155110	Hs.5624	1			15.76076853
811028		Hs.9946	3		Y	15.9619503
628529	P55851	Hs.76840	3			6.961564807

Table I

35271	AB002341	Hs.7912	0		6.711546256
308588	L37033	Hs.173464	0	Y	9.076617429
810391	U03056	Hs.75619	0	Y	15.24643713
549101	P14118	Hs.75879	2		9.407543118
763770		Hs.195770	0	Y	5.337941756
40844	AB002309	Hs.89666	0		5.185275951
770910	U66894	Hs.166096	0		6.238742998
43198	P27707	Hs.198479	1		5.196662142
85805	P02753	Hs.76461	0		8.230988018
782760		Hs.154654	0	Y	8.919540898
841641	P24385	Hs.82932	0	Y	5.212952527
668851	P23560	Hs.56023	0		5.286097891
80109	P01908	Hs.53875	1		7.18937028
810859	P24001	Hs.943	0	Y	12.96372889
789069	P28300	Hs.102267	0		5.868647142
51898		Hs.85053	0		7.910926494
144786	P21810	Hs.821	3	Y	12.07339227
701481	P20592	Hs.926	0		5.598294935
782513		Hs.21205	0	Y	12.90952191
815542	P20581	Hs.76391	0		6.973317573
26811	U40622	Hs.150930	1		6.373063965
898092	P29279	Hs.75511	3	Y	14.44248323
628336	P05976	Hs.158295	0	Y	5.532693724
774071	U45976	Hs.7885	1		5.358869508
144797		Hs.8230	0	Y	7.56273939
240199		Hs.18653	0	Y	5.144570146
120162		Hs.214410	4	Y	6.021510207
134719		Hs.170047	0		7.5466765
67069		Hs.13197	0		5.532828885
214577	U94316	Hs.18747	0		5.09061999
275634		Hs.35372	0	Y	5.446167192
258895	U88323	Hs.17155	0	Y	5.880432924
198104		Hs.102004	0		6.119518234
279195		Hs.26770	0		5.173966823
248688		Hs.48401	0	Y	7.211474194

Table 1

277305	P01121	Hs.204354	5	Y	21.28283813
417711		Hs.181366	1		47.0451241
278808	P17947	Hs.157441	0		6.738232461
668442	Q16832	Hs.71891	0		7.222903107
120881	Q13636	Hs.107325	1		24.12050769
295798	Y12711	Hs.90061	1	Y	6.070334022
813426	D87119	Hs.155418	0		8.717450883
361943	Q99887	Hs.170177	0		16.51151344
810213		Hs.198351	4		6.839756084
509823		Hs.73848	1	Y	70.96205767
325062	L20859	Hs.78452	1		6.272860131
823928	P30712	Hs.1581	0		7.251440522
137940	P21266	Hs.2006	1		13.0331251
52933	U41060	Hs.79135	5	Y	25.4445697
276449	P08236	Hs.198902	2	Y	8.901115907
898138		Hs.811	0		5.030963085
470379	D86840	Hs.56045	0	Y	13.33282025
773319	P23443	Hs.86858	1		17.19452023
840333		Hs.82432	0		6.619110349
66594	AF063605	Hs.11000	0		5.271012952
382773		Hs.180532	1	Y	19.56105286
486208		Hs.2025	1		9.132979649
298702		Hs.10445	0		5.335753263
129610		Hs.22026	0		8.063679428
321706		Hs.6189	0	Y	20.37404042
121275	P05538	Hs.203656	0	Y	11.18343977
141314		Hs.113029	0		8.244344447
240748		Hs.29106	0	Y	8.231155193
809552		Hs.10109	0		5.170216547
324342	Q02083	Hs.78264	0	Y	7.252806868
242787		Hs.24341	0	Y	5.587195707
809719		Hs.170121	2	Y	9.714066169
243088		Hs.41972	0		17.69891502
211859		Hs.228019	0	Y	7.063004021
324703		Hs.16003	1		5.30962779

Table I

357373	Q15398	Hs.77695	1		5.46953874
271050	AF114165	Hs.82002	0	Y	11.15214427
246652		Hs.194050	0	Y	5.251121236
143661		Hs.102541	0	Y	6.316575205
813410	P53803	Hs.150675	3		5.098047387
488436		Hs.82790	0	Y	6.634136626
293331		Hs.49047	0		6.21562608
115443	P49454	Hs.13525	0	Y	5.1001998
753775	P36959	Hs.1435	0		5.934021576
45542		Hs.103391	0	Y	178.4295261
768246		Hs.80206	0		5.954556651
24642	L46720	Hs.174185	0		20.08185023
292219	P05156	Hs.36602	0	Y	5.138076027
813149		Hs.2178	5		8.802085332
243741	Y12653	Hs.44532	0	Y	6.143305425
823859	P29033	Hs.81785	0		6.454494201
135083	P30101	Hs.110029	0		5.623140978
700527	P35754	Hs.28988	1		7.998602126
526657	L47345	Hs.155202	0	Y	11.48223754
842846	P16035	Hs.6441	0	Y	5.135760452
22731	P06905	Hs.1787	0		5.745294211
199628		Hs.138514	0	Y	6.177510005
703581	P10124	Hs.1908	2	Y	27.92802338
814054		Hs.158282	0		5.933452226
108658		Hs.4084	0		5.502051614
758266	P35443	Hs.75774	0		9.821274672
789376	Q16881	Hs.13046	5		5.289723984
201288		Hs.36137	1		6.841122098
296155		Hs.23044	0		5.178209358
130057		Hs.23057	2	Y	8.637192391
191978	P56134	Hs.155751	1		5.273665487
144905		Hs.29494	0	Y	6.313885817
245401		Hs.141542	0	Y	6.479638858
233419		Hs.102657	0	Y	7.009822251
234080		Hs.38772	0	Y	5.31426711

Table 1

810754	AC002544	Hs.213632	2	5.881465442
214331		Hs.28523	0	5.838042138
132140		Hs.93961	0	9.208209297
80146	U46767	Hs.11383	0	5.904499849
347373	L34587	Hs.184693	1	5.249369407
213890	Q16698	Hs.81548	1	7.600567454
810974	Z46606	Hs.3068	0	5.730216768
840942	P04232	Hs.814	0	13.66364683
155575		Hs.26395	1	8.565835361
487118	P22760	Hs.587	0	24.80178683
898258	P15882	Hs.169965	1	14.81885772
814306		Hs.2384	1	9.206537459
823590	U14550	Hs.107573	1	5.540513991
42373	Q14894	Hs.924	0	6.075303366
897770		Hs.183650	1	6.950404155
240518	P05154	Hs.1305	0	200.3235451
485989	P80098	Hs.157319	0	43.7456556
840702	P49903	Hs.124027	0	6.130708697
80109	P01908	Hs.53875	1	6.819699161
898286	P06493	Hs.184572	6	7.944266115
767345	P56289	Hs.44898	0	7.291946946
786067	P30305	Hs.153752	0	6.520046153
134856		Hs.24510	0	6.699174001
139835		Hs.28309	1	5.336146503
340722		Hs.85195	0	6.253005238
123255	P15923	Hs.4963	3	8.40920037
35191	D50645	Hs.118684	0	5.447009074
470379	D86640	Hs.56045	0	12.66197619
244062		Hs.19054	0	17.20960259
142944		Hs.10784	0	18.5073495
138974		Hs.28357	0	5.057151629
143169		Hs.183576	0	8.452245206
309515	P49747	Hs.1584	1	12.28065748
131887		Hs.103395	0	6.76273197
121251		Hs.103834	1	7.879084852

Table I

416280	P10242	Hs.78943	0		5.003380586
752732	Q13867	Hs.24385	0	Y	5.74495155
134270		Hs.79351	0		5.681582605
288896	U33632	Hs.153595	1		5.539595618
143846	U33837	Hs.178452	0	Y	10.41177781
366558	P46060	Hs.8265	4		6.296979458
199945	P21980	Hs.169946	1		12.05681414
214068	P23771	Hs.82771	3		10.82446855
824117	AB000450	Hs.193897	5		6.373388389
841278		Hs.8122	0	Y	7.447813001
754358	X73608	Hs.195136	0		7.02807318
840878	Q15392	Hs.3314	2	Y	9.481127436
530814		Hs.79295	0	Y	31.13002274
840384	Q12849	Hs.155291	2	Y	15.81363572
773922	D13630	Hs.170279	5		5.97165513
71116		Hs.111676	1	Y	9.568859601
205049		Hs.154737	2		31.64527968
143887	AF015287	Hs.7753	2	Y	31.52609898
144881	U67280	Hs.174050	0	Y	5.272468588
262920		Hs.34262	1	Y	8.096710975
242011		Hs.150826	0	Y	7.993916806
308989		Hs.14355	0		5.47666508
297439		Hs.20191	1		7.055181311
470061	Y15268	Hs.94037	0		8.368906952
132871		Hs.6349	0	Y	47.58014679
299197	U95740	Hs.42586	0	Y	7.056016613
121727		Hs.6829	0		5.885117759
490755		Hs.56105	0		10.82235567
325247		Hs.222252	0		15.12296587
795735	AF129756	Hs.11732	0		8.058745854
429799		Hs.32943	0	Y	5.060138615
309583	P49788	Hs.56105	2		11.68516409
503051		Hs.43905	0		25.67539869
366085		Hs.89472	0		9.431766892
210687	P30555		0		5.60429728

Table I

509731	P19075	Hs.84072	0	Y	8.309317528
360213	L47665	Hs.172471	0		8.507838492
357031	P98066	Hs.29352	5		12.35574709
813591	X86032	Hs.69575	0	Y	6.319976186
768370	AF048693	Hs.93468	5		19.82693486
289337	P01859	Hs.140	6	Y	49.42575483
813714	AF010127	Hs.195175	0	Y	17.24536061
359982	U15174	Hs.79428	0		5.99234609
130843	U62317	Hs.80545	0		7.451005956
809901	P39059	Hs.83164	0	Y	6.504408908
134783	P12107	Hs.82772	0		29.62594764
839101		Hs.74471	0	Y	12.76050466
46916		Hs.90800	0		9.807054746
143523	P20908	Hs.148428	4		13.72872152
83605	P31327	Hs.50966	0	Y	11.91904261
825085	AF118224	Hs.56937	0	Y	5.788422695
840818	AF043045	Hs.81008	1	Y	7.930414097
589352	P10909	Hs.75106	2		8.351843398
277015			0		7.081090823
122159	P02461	Hs.119571	0	Y	216.8717592
712341	U85625	Hs.8297	0	Y	13.08487403
203132	P50591	Hs.83429	0	Y	6.887165996
40751	P55286	Hs.79133	0		5.891680288
700792	Q16667	Hs.84113	0		15.09562152
135058		Hs.169836	0		5.246818308
137989		Hs.28392	0		8.68580656
214658	AF052389	Hs.4980	1		14.24555006
140197		Hs.103291	0		9.402417083
141209		Hs.28403	0	Y	10.82330231
233688		Hs.8850	1		12.88132406
207107		Hs.117774	0	Y	6.372074439
738625	AD000092	Hs.227489	0	Y	5.156391269
204688		Hs.37424	0	Y	6.952375556
1048810		Hs.76285	1		39.42923893
66437	P18428	Hs.154078	0	Y	13.0466819

Table I

1341680	P28300	Hs.102267	0	Y	35.38007638
1206882		Hs.35992	0		12.47770808
155072		Hs.29190	0	Y	15.70016215
511428	U28249	Hs.92323	0	Y	6.839914573
234736	Q92508	Hs.50924	1		17.69591789
22040	P14780	Hs.151738	0		6.964971519
727192	AC004531	Hs.172674	0		5.274953682
196612	P39900	Hs.1695	0	Y	8.875738161
725680	X95693	Hs.61796	0		6.161011097
589115	P03956	Hs.83169	0		23.5753603
198815	AF027516	Hs.14894	2	Y	5.58364564
212496	Q16706	Hs.32965	0		9.277690775
754046	Q14657	Hs.18212	0		7.838777522
741139	O00167	Hs.29279	0		16.73483678
308437	P04056	Hs.576	0	Y	6.475054459
687482		Hs.80395	0		6.635840501
301122		Hs.81071	0	Y	23.31215417
756372	U77594	Hs.37682	0	Y	11.53678406
813751	Q11206	Hs.75268	0		6.112692073
131839	P15328	Hs.73769	0	Y	12.28419437
840654	P02810	Hs.73952	0		8.269661947
825224	P78406	Hs.196209	1		6.048797364
789012	P98096	Hs.198862	1	Y	51.30738036
139009	P02751	Hs.118162	1	Y	22.54385839
358468	AF151881	Hs.96334	1		9.110779502
81394	U67963	Hs.6721	0		6.641839697
210717	P34741	Hs.1501	0	Y	12.2879167
23073		Hs.56066	2	Y	8.469439213
836802	P13674	Hs.76768	2	Y	5.507144578
122159	P02461	Hs.119571	0	Y	612.5688811
361974	P21246	Hs.44	1	Y	22.52864326
195052		Hs.34371	0	Y	8.813636224
470348		Hs.31841	0	Y	8.68047442
195139		Hs.34399	0	Y	6.571461531
301678		Hs.94542	0	Y	5.702446501

Table I

347036		Hs.44865	0	Y	6.435900536
809488		Hs.7252	0		5.275559284
796489		Hs.169829	0	Y	5.873622007
235008		Hs.182874	0	Y	6.161054393
243878		Hs.44970	0	Y	8.771785931
344141	Q08828	Hs.139	0	Y	6.362291388
296679	P55289	Hs.44898	0		6.812214184
592243	P20061	Hs.2012	0	Y	34.61466719
713685	P07478	Hs.2003	0		19.62960245
812105		Hs.75823	1		5.107665381
123561		Hs.75621	0	Y	9.656723542
27104		Hs.76986	1		5.131627263
753211		Hs.170917	0		13.61085298
262996		Hs.198674	0		10.38622934
357220	D84361	Hs.151123	0		5.669547224
43977		Hs.75909	0	Y	14.29246916
301504	Q92832	Hs.21602	0		6.087063486
143287	P06731	Hs.169980	0	Y	13.18777642
49860	Q15119	Hs.92261	0		8.979366803
138991		Hs.80988	2		116.7535149
838568	P09669	Hs.74649	3		10.13435781
51814	P04080	Hs.695	1		6.285448388
897910	D13665	Hs.136348	4		12.82287649
814378	U78095	Hs.31439	3	Y	8.057095833
505059	P28845	Hs.37012	0		8.531988696
771196		Hs.138860	0		6.113734783
787938		Hs.5462	0	Y	5.54111412
788566	P48539	Hs.80296	0		5.204708993
897956		Hs.30743	0		12.21865363
796398	U90336	Hs.139033	0		10.77738406
47043	U58514	Hs.9973	0		7.856108049
140630		Hs.170131	0		5.452337248
141298		Hs.28441	0	Y	5.990011741
123087		Hs.118910	0		38.85281017
203931		Hs.6006	0	Y	5.402111146

Table 1

139957		Hs.28472	0			34,14162559
810928	O60568	Hs.153357	0	Y		6,606923131
200838		Hs.159890	0	Y		8,292638254
295483		Hs.49853	0	Y		5,543835471
127400		Hs.155414	0	Y		8,852547662
345616	Q14956	Hs.82226	1		Y	10,84238576
416567	P05154	Hs.76353	5	Y		5,036661434
261019		Hs.181312	2	Y		5,481281242
139009	P02751	Hs.118162	1	Y	Y	20,95842364
547247	P52823	Hs.197382	1	Y	Y	5,628837395
811162	Q06828	Hs.230	1	Y		17,16580599
752631		Hs.1420	0	Y		5,558598018
121722		Hs.79432	0			7,416994349
769921	O00762	Hs.93002	0	Y		6,443805607
292213	P11016	Hs.91299	1			5,77239187
767851	P35555	Hs.750	2			14,32868763
823590	U14550	Hs.107573	1	Y		6,095493793
813823	P51884	Hs.79914	0	Y		56,90851978
306901	Q16612	Hs.142827	4	Y		11,55069819
70692	P05120	Hs.75716	2	Y		10,54856455
789091	P28001	Hs.28777	0	Y		8,218881948
789147	P09104	Hs.196837	2			10,75631475
82976		Hs.170218	2	Y		5,068546421
813410	P53803	Hs.150875	3			5,542666904
231675	P22794	Hs.41845	1			5,553998675
265494	D29810	Hs.153445	0	Y		8,258641604
138861	AL050071	Hs.21201	0			5,683930872
196005	Q92482	Hs.174024	1	Y	Y	9,215082922
209167		Hs.32391	0	Y		6,632843771
293579		Hs.49636	0	Y		8,834449222
202740		Hs.32407	0	Y		5,531315004
109316	P01011	Hs.107325	0	Y	Y	38,03046471
109309		Hs.23767	0			6,714521241
201757	AF033026	Hs.173739	3			12,9230754
195820		Hs.34558	0	Y		9,696837718

Table I

195821	Hs.34560	0	Y	5.864940789
360885	Hs.89474	0		5.354239633
782161	Hs.84084	1	Y	16.26931789
782306	Hs.7358	1		11.31882773
213871	Hs.46853	0	Y	7.735217217
257011	Hs.8859	0	Y	7.382499202
130895	Hs.90790	0		8.107732186
811582	Hs.182793	1	Y	9.910138102
130835	Hs.96125	1	Y	8.845534314
160702	Hs.22554	1		8.163086081
897497	Hs.127428	0		6.513127704
813841	Hs.173736	1	Y	8.961018602
244307	Hs.82085	0		12.00688438
171936	Hs.114215	0		7.210116014
810873	Hs.2794	1		5.428196363
812227	Hs.170222	0	Y	5.433545065
124753	Hs.94395	0	Y	6.067975027
190732	Hs.33084	0	Y	5.178533144
347434	Hs.181243	0	Y	5.50344557
823940	Hs.178137	1		5.356942465
897531	Hs.82914	0	Y	6.859788221
51865	Hs.155097	0		38.4159728
950578	Hs.83916	0		6.257650998
26617	Hs.10247	1	Y	6.765251703
784360	Hs.12451	0	Y	13.37409486
843049	Hs.154443	0		7.731377723
48285	Hs.74427	0		27.61155653
782513	Hs.21205	0	Y	9.882585473
251685	Hs.75929	3		22.7418879
208413	Hs.823	0	Y	11.96143272
823851	Hs.118397	0		20.38430063
785293	Hs.37189	0		21.39481592
137535	Hs.183858	0		5.781976787
124071	Hs.19404	0		5.915392436
201483	Hs.179882	0	Y	7.600632902

Table 1

140103	Hs.28646	0		6.400043535
159725	Hs.32043	0	Y	11.74171549
307933	Hs.19236	2		6.066421899
246377	Hs.102670	0		73.32139838
144880	Hs.107203	2		5.62728967
212542	Hs.21851	2		8.58345833
296668	Hs.50382	0	Y	10.58051614
135688	Hs.760	0		6.859214786
284592	Hs.74615	2		11.21256643
491113	Hs.75929	3		36.22837049
124232	Hs.225039	0	Y	8.69034486
153025	Hs.2250	0		5.523286128
810813	Hs.38991	1		7.851063469
46356	Hs.30956	0		9.617604814
160723	Hs.214982	0	Y	5.213667091
44505	Hs.125862	0		5.768154927
32609	Hs.78672	2		44.286613
51447	Hs.763	1	Y	5.001675119
142122	Hs.80306	0		6.98732007
809598	Hs.73932	0		14.04390147
810331	Hs.71816	5	Y	9.671567118
41591	Hs.79085	0	Y	6.612048305
897906	Hs.2554	0	Y	6.947873136
380057	Hs.84084	1	Y	6.354204001
788518	Hs.180512	0	Y	5.526499668
131867	Hs.25155	1		5.448282937
120138	Hs.16940	0		7.714620977
898218	Hs.77326	4		25.87427247
840691	Hs.21486	0		5.105001604
783721	Hs.60712	1		5.115680405
815781	Hs.36927	1		6.020948984
705274	Hs.115907	1	Y	5.018905531
133084	Hs.24025	0	Y	5.372234362
110772	Hs.109052	0		5.942862501
325160	Hs.169330	2		16.08905795

Table 1

130004		Hs.20854	0	Y	5.803993455
244781		Hs.34570	0	Y	5.006463552
246531		Hs.102521	3		5.049396563
111389		Hs.179808	0		18.54310758
366585	U35637	Hs.12169	0	Y	5.704874721
241847		Hs.99969	3	Y	5.57027329
121798		Hs.91165	0	Y	16.32752381
327250		Hs.8053	0		6.261206854
782537		Hs.8154	0	Y	18.77462497
488202		Hs.49433	0		17.27794776
130421		Hs.98606	0	Y	12.54394232
308497		Hs.11147	5		7.582451816
322223		Hs.108502	0	Y	12.74864761
357396		Hs.24139	0	Y	5.582478491
502527	P56189	Hs.15970	0		21.51733994
755373	Q13105	Hs.33532	0	Y	10.02769998
210820		Hs.108155	0		26.33422505
324437		Hs.789	0		7.880418347
325128		Hs.49587	5		5.451648085
51363	P41217	Hs.79015	1		35.91627646
236034	P55851	Hs.80658	3		82.63831288
79000		Hs.10974	0		11.902779
34204		Hs.75090	0		27.58035264
853809	AF030108	Hs.24950	0	Y	6.118140026
586706	P06731	Hs.220529	0	Y	6.189927051
51178	Q92556	Hs.198613	0	Y	16.69754991
796694	L26245	Hs.1578	0		7.619670376
742595	Q00535	Hs.166071	2		6.576771467
588609	AB007885	Hs.54697	3	Y	17.12582589
79726		Hs.11067	0	Y	14.20634739
86035	AF151869	Hs.11085	0	Y	9.414560976
41647		Hs.91603	0		9.815380518
79576		Hs.11090	0		5.292269417
34597	AL030996	Hs.16411	0	Y	5.243067263
593114	AB005656	Hs.7019	0		8.623109041

Table I

34070		Hs.159769	0	Y	5.343700855
589869	AL050107	Hs.24341	0		7.575679492
39815		Hs.23027	0		5.220342115
49918		Hs.26903	0	Y	5.395281943
52076	Q99784	Hs.74376	0		28.18625488
781467		Hs.11217	0		9.58226556
714472		Hs.7416	0	Y	7.296327768
52435		Hs.26979	0	Y	11.15659791
45852		Hs.106794	0		9.726687092
39973		Hs.25922	0	Y	5.862271029
322461		Hs.35198	0	Y	12.13492492
414994		Hs.179573	0		13.02527724
810979	AF151849	Hs.20776	0		5.16518066
487151		Hs.11260	0	Y	9.05366843
502625		Hs.47099	1	Y	9.256299821
417688		Hs.20851	0	Y	7.036175721
346308		Hs.47125	0	Y	5.76826066
375716		Hs.10491	2	Y	7.643267218
811139	P01913	Hs.181366	1	Y	233.6544879
428721		Hs.148493	0	Y	78.71974577
854444	P01919	Hs.73931	0		11.15231696
810142		Hs.77961	0	Y	5.243247016
207550		Hs.153954	2	Y	8.925660455
361323	Q08116	Hs.75256	0	Y	25.29907608
845419	X99226	Hs.86297	1	Y	5.008023574
33585		Hs.12902	0	Y	6.851286087
40009		Hs.21245	0	Y	6.420878801
854668	P46527	Hs.3561	0		5.421332328
49491		Hs.104036	0		6.537787898
435036	X97324	Hs.3416	0	Y	24.4675747
757222		Hs.59889	1		26.94940047
33438	P49848	Hs.78865	0		5.852519644
51320		Hs.169482	0	Y	13.22709571
45607	AF062733	Hs.6164	0	Y	9.062970521
194353	P35658	Hs.170285	0		5.158415616

Table 1

22374		Hs.13207	0	Y	20.02031122
154172		Hs.111732	0	Y	7.462207974
725321		Hs.198564	0		36.07492569
47359	P05305	Hs.2271	0	Y	17.03837375
51631		Hs.6278	0		6.505608277
491751	U88964	Hs.183487	2		10.92941711
726658	U29656	Hs.81687	0		10.3823093
266732	Q14188	Hs.19131	0		5.935679098
51547		Hs.6391	0	Y	6.487145928
52021		Hs.30098	0	Y	7.13254404
32991	Q14416	Hs.106356	0	Y	9.645445128
811324		Hs.214783	2	Y	5.069002121
841610		Hs.7904	0		5.455621444
796775		Hs.244	0	Y	6.078208334
272616		Hs.44792	0	Y	6.34708317
129020		Hs.6649	0	Y	50.7602342
40338		Hs.217489	0		6.360674636
950355		Hs.110080	0		5.062539701
32110	AF098951	Hs.194720	0	Y	7.13125524
897593		Hs.6728	0	Y	16.29208625
300276		Hs.12150	1	Y	6.990883295
773142		Hs.8035	0		5.456251356
74738		Hs.80449	0	Y	5.747720845
33854		Hs.108642	1	Y	112.9771019
289734		Hs.27818	0	Y	5.012139718
322175		Hs.132146	0		8.680042829
323988		Hs.199041	0		6.119660582
810224	AL049946	Hs.72157	2	Y	6.441162754
207275		Hs.123650	0	Y	5.21952746
358689		Hs.83705	1	Y	6.467199817
215000		Hs.198726	0	Y	28.89457421
321908		Hs.136482	0		20.62232218
178950		Hs.75099	0		5.204060159
345034	AF073957	Hs.24395	5	Y	8.820505907
50531		Hs.138447	0	Y	5.437103427

Table 1

68636		Hs.9061	1	Y	5.213216159
344430	P18075	Hs.170195	1	Y	72.23448317
347031	Q12767	Hs.80540	0	Y	5.148702815
179083		Hs.176977	0		8.755329465
1031552	D83492	Hs.3796	0	Y	7.055273511
70152		Hs.108740	0	Y	5.185971458
259591	P06731	Hs.173609	0		6.499873817
77193		Hs.9115	0		5.857874681
154472		Hs.748	0	Y	24.32459398
415191		Hs.78894	0	Y	5.295594499
71763		Hs.27258	0	Y	5.312092442
853066		Hs.5719	0	Y	7.128213443
342349	Y10256	Hs.47007	0	Y	7.093631526
40108		Hs.25935	0	Y	6.948292414
773649		Hs.177425	0	Y	5.409288841
51939		Hs.7888	0		11.06267732
882510	P52292	Hs.181043	2		7.262064754
46617		Hs.27222	0	Y	6.545194847
51103		Hs.27358	0		11.34719096
324122		Hs.41716	2		26.64984269
1048696		Hs.112449	0		6.74961639
34462		Hs.26309	0		7.037294193
68605	S75725	Hs.119206	0		8.983540681
855523	P22352	Hs.172153	3	Y	13.72717076
624360	Q03518	Hs.180062	3		8.489196814
61638		Hs.129368	0		5.051601047
323603	Q99798	Hs.31702	0		5.078618258
502664		Hs.35861	0		22.21407619
289057		Hs.47166	0		6.209651336
502165		Hs.199001	1		13.13928921
271280		Hs.107854	0	Y	5.909771082
283089		Hs.47209	0		5.127654574
418262		Hs.119571	0	Y	7.429690367
865547		Hs.181366	1	Y	96.21944165
272038		Hs.93605	0		26.39012357

Table 1

293925	P00695	Hs.177746	1	Y	6.814069916
344589	P13796	Hs.76506	0		14.67382749
138788	P16471	Hs.1908	0	Y	99.56356145
854701	P38571	Hs.85226	0	Y	5.89352095
273168	AJ010842	Hs.18259	0	Y	7.192133395
257162		Hs.173609	0	Y	6.082496596
22385	P49798	Hs.13251	0		12.12041288
51344		Hs.6434	0	Y	12.99416248
417424		Hs.86186	0	Y	7.198732424
47469		Hs.125087	0	Y	6.899388471
50898	X86032	Hs.6511	0		8.899323806
131091	Q92685	Hs.153591	0	Y	8.193972871
384015		Hs.150403	0		6.767676055
797025		Hs.100071	0	Y	5.726608725
52684		Hs.6554	0		8.623719944
140574		Hs.80420	0	Y	5.716782582
81203	Q15166	Hs.107966	0	Y	8.242381168
435076	P49454	Hs.77204	2		6.222777722
343987	P27487	Hs.44926	0	Y	34.07603082
291057	P42773	Hs.4854	0		19.86930718
854746	P50290	Hs.146409	0		5.473485638
49654		Hs.6659	0	Y	5.509579934
773106		Hs.22142	2		10.03390279
50080		Hs.70230	0	Y	7.474948966
785198	AF151829	Hs.7854	5	Y	6.119883758
67187		Hs.93476	0	Y	5.589204654
629916	AJ005895	Hs.19105	0	Y	6.104729404
84211		Hs.107055	0		5.798913906
609155		Hs.109528	0	Y	5.552974965
340811		Hs.182307	0	Y	5.316440083
810996		Hs.24375	2		5.408432086
33603	AC004131	Hs.154050	1	Y	7.285731634
265853		Hs.42927	5	Y	5.554228891
257329	D86324	Hs.24697	0	Y	5.773105439
324690		Hs.40098	3	Y	28.88536226

Table 1

501989	Hs.50115	0	5.187728442
417867	Hs.149923	5	7.654168129
741977	Hs.69771	4	46.69762637
131268	Hs.83070	0	17.2281832
52226	Hs.26971	0	16.92856749
41358	Hs.104105	1	5.313362511
79739	Hs.168005	1	5.097078511
243159	Hs.171952	0	5.071117862
71883	Hs.5944	0	5.183569778
50383	Hs.23740	0	6.180394684
34014	Hs.23751	0	6.318869888
45501	Hs.23961	0	16.58986515
78736	Hs.3964	0	13.77782302
46177	Hs.30897	0	6.567525716
1056198	Hs.22333	0	9.598220056
51020	Hs.28096	0	6.472603247
46461	Hs.30957	0	5.839769926
773446	Hs.17481	1	5.044670911
430231	Hs.47269	0	6.807556298
358936	Hs.21452	0	5.36626744
357278	Hs.47343	4	13.03891137
488140	Hs.44883	0	6.259378009
491184	Hs.44892	0	8.847324803
430319	Hs.18799	0	7.010278407
503981	Hs.21594	0	35.593756
415828	Hs.75874	0	51.45505723
325641	Hs.169980	0	23.13308057
454822	Hs.2777	0	29.80347335
460487	Hs.347	0	25.77672661
418150	Hs.59075	0	5.510841438
1035889	Hs.3235	0	193.8382308
586796	Hs.84905	0	6.401903738
50582	Hs.6667	0	9.210681587
76221	Hs.222566	1	6.773869348
52704	Hs.21902	0	6.877621544

Y

Y

Y

Y

Y

Y

Table 1

52974		Hs.108894	0	Y	5.327392617
52086		Hs.107374	0		6.092402372
49863		Hs.91813	1	Y	5.182891626
878449		Hs.82503	1	Y	8.970858897
742565		Hs.15760	0		5.474400582
460866	AC000115	Hs.9030	0		37.21514086
77651	AJ011972	Hs.6764	0	Y	10.97623394
34114		Hs.107331	0	Y	6.133673932
856434	AF002163	Hs.75056	0	Y	21.40958612
769803	P53365	Hs.75139	0	Y	9.14593855
85609	P38117	Hs.74047	0	Y	7.547206526
41424		Hs.106576	0		10.39469183
487327		Hs.110453	0	Y	91.56101705
52618		Hs.226039	0	Y	6.561480564
951068		Hs.7921	0		11.77737413
41525		Hs.108074	0		6.782923051
770885		Hs.5566	0		8.492441566
282838	AB011141	Hs.34871	0		8.063786701
51015		Hs.108507	0		48.90304741
46584		Hs.90363	0	Y	7.442551155
773073		Hs.84461	0		5.141272194
289125		Hs.177812	0	Y	8.624949589
51185		Hs.125019	2	Y	6.335111867
588053		Hs.135344	0	Y	5.81606434
625764		Hs.110454	0		5.628181363
348861		Hs.23766	0		5.953317042
301995		Hs.25248	0		7.643078074
782547	AF015287	Hs.25338	2	Y	9.136653273
811048	AB002313	Hs.105958	0		6.755158785
324665		Hs.143809	0	Y	14.38677986
234955		Hs.187523	0	Y	5.083565319
324951		Hs.40098	3		56.20731233
490023		Hs.173902	0		9.18440604
810446		Hs.109631	0		5.680708264
430186		Hs.103305	0		11.11267231

Table I

153355	P16619	Hs.73817	5	Y	5.668142175
68207		Hs.9521	0		7.383978559
249603	AF099989	Hs.199263	0		5.289750882
781089	AF062649	Hs.159628	0	Y	5.476719985
744917		Hs.11342	0		8.350532719
770388	AB000712	Hs.5372	0	Y	12.4326427
79766	AB018301	Hs.22039	1	Y	5.688752172
773286	AF036241	Hs.184276	1		20.31985919
454672	U13616	Hs.75893	0		9.920533538
84586		Hs.12211	0		8.489882927
725877	P10909	Hs.75106	0	Y	35.41286983
853687		Hs.904	0		5.587857721
197520		Hs.198041	0		11.94698509
491565		Hs.82071	0		20.62901687
795321		Hs.182923	0	Y	6.992906891
772912		Hs.25598	0	Y	6.74934209
46694		Hs.103720	0	Y	6.343807487
49275		Hs.225695	0	Y	7.271679582
484874	P05106	Hs.85296	1		5.029986859
796287	P06753	Hs.31239	0	Y	16.45982273
76605		Hs.226499	0		6.222484996
50227		Hs.31444	0		12.51715149
47225		Hs.12183	0	Y	6.914473127
76182		Hs.107253	0		5.233439037
51542		Hs.31771	0	Y	6.045077082
25194		Hs.25318	1		5.62352979
52303		Hs.30484	0		6.759787198
742569	U29091	Hs.29128	0	Y	5.313036022
80338	AC004520	Hs.7833	2		94.33886612
509564		Hs.22900	0	Y	17.40521425
811581		Hs.21835	0		12.47896302
321859		Hs.37282	0		8.39278717
200656		Hs.21851	2		8.583871849
488431		Hs.21894	1	Y	5.000188503
415229		Hs.37331	0	Y	18.62795199

Table 1

809357		Hs.21970	0	Y	5.116566909
307337	AB018301	Hs.22039	1		19.04300451
345081		Hs.33106	0		9.409896515
549933	P10145	Hs.624	0		64.20702098
283315	P15259	Hs.46039	0	Y	10.14511823
310406	P05231	Hs.93913	1		15.54855402
358752	AJ222967	Hs.84837	0	Y	6.502640654
272951		Hs.15767	0		7.579337121
795907		Hs.99101	0		8.472933614
342008	P19012	Hs.74070	2		6.532912307
145112	P05362	Hs.168383	2	Y	6.680474894
293950		Hs.149255	1		13.68701348
285843	Q02318	Hs.82568	0		30.12850953
45587		Hs.107614	0	Y	8.528602815
1031940	P49913	Hs.51120	0		5.836143383
125187	P18074	Hs.99987	1		6.690516007
78525	AF044221	Hs.173091	2	Y	5.065422583
46166	P51589	Hs.152096	0	Y	6.667614073
47005		Hs.6818	0	Y	5.463461437
51210	AB022918	Hs.34578	0	Y	20.72332967
45493		Hs.22195	0	Y	5.98262676
32325		Hs.22223	0	Y	7.754409488
46105		Hs.22226	0	Y	21.60106246
725395	AF143807	Hs.169895	1	Y	6.014355031
47597		Hs.6946	0	Y	6.171006199
415388	P07311	Hs.18573	0	Y	6.457203113
436062	Z34531	Hs.89866	0	Y	5.754645734
46647		Hs.22245	0		13.53856188
79562		Hs.57549	0		8.472117249
261745		Hs.57079	1		5.357638369
743182		Hs.5790	0	Y	7.013376952
509516		Hs.8694	0	Y	6.006799215
345032	U85625	Hs.8297	0	Y	5.991732224
772437	AB014538	Hs.77864	0	Y	6.31425587
840777		Hs.6296	0		5.995325831

Table I

841645	Hs.84359	2	Y	10.44648036
73853	Hs.75257	0	Y	5.518393301
50007	Hs.91627	0		7.981299243
743739	Hs.198340	1		15.7369702
32576	Hs.91723	0		23.28957214
25843	Hs.110746	0	Y	7.249752102
504308	Hs.14559	0		7.209509861
489373	Hs.25557	0	Y	5.302056878
366887	Hs.170195	1	Y	22.59027147
278729	Hs.29088	0		6.180919455
271165	Hs.231544	0	Y	5.726901336
769886	Hs.125359	0	Y	11.06083918
282500	Hs.198897	0	Y	5.77101937
257422	Hs.169998	1		16.64614394
80186		0		14.08652358
809682	Hs.56828	0	Y	7.484558859
241432	Hs.142827	4		26.58875419
415089	Hs.153704	0		6.353473137
855395	Hs.75760	1	Y	6.359611178
259996	Hs.102500	0		7.816184855
503824	Hs.29353	0		6.843401644
742798	Hs.69360	0		5.352387189
23903	Hs.12526	0	Y	5.487550276
814796	Hs.75746	0		5.052416159
811024	Hs.118110	0	Y	7.398087651
971212	Hs.75063	0		40.85841786
33028	Hs.12332	0		8.593434467
868332	Hs.914	0	Y	60.66165226
46294	Hs.12364	0		5.279094208
45645	Hs.25409	0	Y	5.672358707
741831	Hs.154854	0	Y	15.00257155
79217	Hs.10263	0	Y	5.934086964
50354	Hs.30837	0	Y	26.20981668
50403	Hs.25748	0		54.07308037
45728	Hs.30853	0	Y	5.867396451

Table 1

511096		Hs.19322	0	8.595328161
345680	U96750	Hs.194695	0	211.0315809
46506		Hs.30901	0	8.297453119
346321		Hs.182471	0	26.68506315
357298		Hs.22483	0	11.93811558
283919		Hs.795	0	8.960230115
240663		Hs.75621	0	6.164797551
192088		Hs.93337	0	5.381492455
782688	AF006386	Hs.33846	0	5.158613823
207826		Hs.120969	0	5.748096299
68049		Hs.103391	0	5.169048171
269997	AJ222967	Hs.64837	0	5.18967631
359009		Hs.64867	0	5.523597508
257523	P36915	Hs.83147	0	5.558364334
212347		Hs.107924	0	6.146782839
782730		Hs.197419	0	5.858897789
502721	P08183	Hs.21330	0	6.447410131
795744	Q02252	Hs.99524	0	9.934072306
298417	Q07654	Hs.82861	1	8.59608543
755599	P13164	Hs.146360	1	11.80574958
279970	P29274	Hs.1613	0	17.4755295
83549	P00736	Hs.1278	0	6.119305502
725176		Hs.118721	0	5.682833639
460470	P20851	Hs.99886	0	19.22903067
109863	P54851	Hs.29191	0	6.941511469
49858		Hs.3840	0	6.830153615
47378		Hs.22265	0	12.96650517
278242	Q15120	Hs.54148	0	5.489885635
46862		Hs.15767	0	5.75063037
52730		Hs.7130	0	6.928764877
83506		Hs.4188	0	7.596827117
287745	U38847	Hs.151518	0	5.8879333475
243882	U78305	Hs.100980	0	28.02648834
344759	Q05048	Hs.172865	1	6.785795225
33293		Hs.7189	0	8.504850482

Table 1

46933		Hs.22469	0	5.261768311
586725	L42374	Hs.75199	0	5.898559117
52996		Hs.155553	0	6.579777236
33523		Hs.22590	0	6.477881903
45500		Hs.91791	0	13.6898485
366167	Q14739	Hs.11114	0	5.264382321
627055		Hs.9850	0	9.413512945
877664		Hs.3763	0	10.26951837
47306	Q05655	Hs.155342	0	7.226888208
46561		Hs.93605	0	15.10919754
949988		Hs.180320	1	10.70867341
772880		Hs.11500	1	6.465170777
32683		Hs.100912	0	8.048072476
50879		Hs.94790	0	16.77986137
838639		Hs.169358	0	5.509071145
341641		Hs.7949	0	31.05273383
810981		Hs.15125	0	5.082549906
321800		Hs.42226	0	57.55009761
275798	AB018356	Hs.198934	1	8.174618724
729064	P17405	Hs.77813	1	5.052319923
345332		Hs.57836	0	9.721602889
133041		Hs.22370	0	13.84855815
364510	Q01826	Hs.198822	0	7.74330775
433350		Hs.878	0	7.424141232
347213	P49903	Hs.124027	0	6.598065639
758347		Hs.178603	5	9.772759095
345849	P28300	Hs.102267	0	128.5003128
460398	P10147	Hs.73817	5	6.561562252
343736	P51671	Hs.54460	2	5.906869601
305538	AF078860	Hs.44162	1	5.633590696
51231		Hs.12382	0	5.078395893
472095	Q15842	Hs.102308	0	15.6681957
772890		Hs.172108	0	5.316748565
770337		Hs.111065	0	8.945428441
868304	P03996	Hs.195851	0	16.0581775

Table I

80643	U70312	Hs.10283	1		21.86427732
80672	AF090988	Hs.10290	0		7.093281839
505491	P53801	Hs.111126	1	Y	6.29839663
121406	P55347	Hs.158225	0	Y	5.687712863
461759	D89050	Hs.77729	0		7.071815341
795526	AF019085	Hs.198045	0		7.263466132
72526		Hs.6385	0	Y	6.52403379
364141	P42262	Hs.89582	0		6.141247918
79817		Hs.11371	0	Y	5.842540331
81229		Hs.11712	1	Y	5.837225764
40150		Hs.26028	0	Y	6.097032979
40038		Hs.26039	0		13.04947066
41391		Hs.26040	0	Y	19.4498269
566106		Hs.5175	1		7.214244137
39959		Hs.28062	0		12.12040502
32082		Hs.13308	0		6.786833156
41825		Hs.26096	0	Y	12.07841314
842879		Hs.5299	4	Y	6.898051065
368663		Hs.48353	0	Y	7.169825492
280375		Hs.46677	1		6.30459616
126739		Hs.135256	0	Y	7.371204349
742132	P05161	Hs.833	1	Y	5.756444852
287687		Hs.1513	0	Y	7.961147081
452374	P19552	Hs.572	0	Y	6.46522421
428434	P04844	Hs.184532	0	Y	5.766696374
588915		Hs.2867	3		6.220314318
504279	AC003007	Hs.76536	0		5.44457698
755578		Hs.184601	1	Y	5.273247546
415145		Hs.196726	0	Y	6.095515909
481644		Hs.107139	1		51.82689988
293893		Hs.107968	0		5.264612381
884655	D30658	Hs.75280	0		7.249665372
531319	AF004022	Hs.180655	1		5.552673508
45877		Hs.4302	0	Y	8.964790206
50819		Hs.7258	0		6.018275831

Table I

46367	P35790	Hs.77221	0	Y	20.43673254
854338	U58514	Hs.154138	0		5.100091365
32962		Hs.22545	0	Y	15.77948436
430868	AF005632	Hs.118410	0		5.841526461
223350	P00450	Hs.111461	0		6.519234227
461727	P00439	Hs.1870	0		6.273367292
49227		Hs.22588	0		7.521839466
429349	P49798	Hs.227571	0		149.4309013
49887		Hs.89582	0		37.10075526
47264		Hs.4892	0		12.61045835
25838		Hs.227226	0	Y	9.634409108
739193		Hs.7678	0	Y	9.326169777
34466		Hs.16704	0	Y	7.700522079
593223	D87684	Hs.181368	3	Y	7.267478081
46195		Hs.173134	0		10.12841951
46411		Hs.92414	0		5.687512132
796148		Hs.7122	0	Y	12.5006982
505225	AF049884	Hs.9817	0		5.743624702
289029		Hs.166436	0	Y	12.26750596
796876		Hs.9825	2		6.975530911
509570	U66063	Hs.12436	0	Y	5.968590833
950429		Hs.26549	0	Y	7.458661016
51986		Hs.24379	0		5.069041169
415329		Hs.124814	0		7.045337282
491367		Hs.42392	0	Y	11.7617619
324345	AB018353	Hs.44074	0		6.906623272
782446		Hs.17894	1		8.511445593
196543		Hs.194901	0		57.01680952
878836		Hs.2265	1		28.08761274
811166	P29312	Hs.191717	0	Y	8.30480114
771240	AF046888	Hs.54673	0		6.372908372
310138		Hs.44481	0	Y	6.027393836
320455		Hs.16520	1	Y	5.036904945
309826	Q16363	Hs.78672	2		48.67546535
742054	P26368	Hs.7655	0		5.161728555

Table 1

418004	P35226	Hs.431	1	11.85920838
250654		Hs.111779	1	12.98924051
307249		Hs.54946	0	5.49512842
281003		Hs.112259	1	33.65617251
174827	P13521	Hs.75426	1	38.39164348
52071		Hs.12498	0	7.427025569
49318	P30530	Hs.83341	1	6.576587407
306841	P01850	Hs.2003	0	21.23849758
897950	P05062	Hs.195409	1	5.046205502
46278		Hs.12537	0	5.740879055
52741	X97187	Hs.26630	0	12.50924719
772425	U09278	Hs.418	1	7.111913141
739191	Q14202	Hs.166125	1	5.359586968
809876	Q06055	Hs.89399	0	6.992353257
41822		Hs.26102	1	7.159112893
41824		Hs.222260	0	17.92470742
811000	L13210	Hs.79339	1	13.2879885
418198		Hs.59319	0	6.593209987
50562		Hs.31446	0	5.707570015
887824		Hs.5472	0	5.182574146
40364	AF045584	Hs.26244	0	8.739959421
85800		Hs.18910	0	5.34495821
512103		Hs.26058	0	5.916167547
50484	AF035013	Hs.26322	0	11.68124618
26196		Hs.228546	0	5.214475751
272706	AB022918	Hs.34578	0	18.05731096
415204		Hs.20188	0	246.6733879
127458		Hs.4789	0	6.174819183
429642		Hs.38449	0	8.370828402
490730		Hs.48756	0	5.069099383
773330	Q14956	Hs.82226	1	14.85184114
144849	L54057	Hs.29748	2	5.775197673
755751	Q04726	Hs.167086	0	9.975883746
502669	Q92769	Hs.3352	2	5.04508497
743188	P35658	Hs.170285	0	5.280980752

Table 1

365149	P22830	Hs.26	0	5.185634963
756502	P36639	Hs.388	0	5.028747668
868368		Hs.75968	1	5.162880351
362409	Q99259	Hs.75668	0	5.292251368
81449		Hs.4932	0	11.05760557
49465		Hs.20914	0	12.72036767
49842		Hs.7908	0	17.17163598
52865		Hs.226352	0	5.334464835
288663	P08034	Hs.2679	0	14.48402377
50114		Hs.187399	1	6.013769204
52339	AF053455	Hs.8037	1	5.343164352
345935	U76622	Hs.198008	0	5.336438537
454908	P01215	Hs.119689	1	77.50252108
124575	AJ003147	Hs.88219	0	8.837261526
470122	Q16558	Hs.93841	0	5.125739148
856447	P13284	Hs.14623	1	5.308007822
51284		Hs.124023	0	6.579705902
841057		Hs.7457	1	5.087800009
51083	U52351	Hs.80220	0	6.47243897
838899		Hs.12372	0	5.845365241
773573		Hs.10338	0	5.508913538
841624		Hs.179669	0	6.256306795
26203		Hs.21379	0	8.22045399
810387		Hs.16236	0	5.520319664
277163	AF078860	Hs.44162	1	5.368750128
428371		Hs.18160	0	5.633487881
562729	P05109	Hs.100000	3	78.54341245
377441	P33764	Hs.2961	0	48.23843238
344126		Hs.58330	0	17.42654997
756595	P08206	Hs.119301	0	17.12511884
365826		Hs.65029	0	6.009851646
970590		Hs.179779	3	6.452042986
624627	P31350	Hs.75319	1	5.422294494
725533	P50225	Hs.181327	1	6.581375428
741795		Hs.170307	0	7.238545848

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Table 1

66599	P18440	Hs.155956	1		64.53273632
78921		Hs.10760	0		17.23201614
68894	P55899	Hs.160741	0	Y	7.879580932
340857		Hs.25195	4		5.467151689
450386	AF052205	Hs.166204	0		5.909777425
200263	P02647	Hs.93194	1		9.933425555
433573		Hs.184584	0		7.875729231
46180		Hs.171495	0		11.47008376
179163	Q14957	Hs.36451	0		17.05254608
503579	U59111	Hs.169993	0		8.170006532
22389		Hs.13222	0	Y	11.70513283
591699	P31271	Hs.71814	0		6.644869771
26387		Hs.21151	0		5.149560255
51548		Hs.31783	0	Y	5.149773425
32050		Hs.21380	0	Y	14.80307244
51672		Hs.112278	0	Y	17.00164688
82903		Hs.179600	0		5.66432432
743146		Hs.16281	0	Y	6.216097782
51378		Hs.31924	0	Y	6.120468805
47451		Hs.26490	0		5.595747335
41192		Hs.26507	0	Y	6.582399434
51992		Hs.22481	0	Y	5.829666533
52329		Hs.26537	0		8.110973084
757197		Hs.105377	0		5.904347172
46827	AF118887	Hs.37331	0		25.39073352
33122		Hs.22646	0	Y	7.646906559
840974		Hs.3376	0	Y	6.658948178
758360		Hs.97848	0	Y	7.856617204
1049033		Hs.86368	0	Y	5.552950164
491405		Hs.5807	2		6.619016389
340864		Hs.23822	0	Y	5.350584259
288807		Hs.20450	0		9.213236093
197067		Hs.35124	0		5.42674479
417075		Hs.49272	0		10.6191566
462953		Hs.82163	0		6.339768975

Table I

236059	Q14451	Hs.86859	0	Y	15.93583732
488579		Hs.165216	0	Y	10.69122819
504461	AF140242	Hs.107318	0	Y	6.287887033
432564	Q15427	Hs.25797	0		6.401879882
290091		Hs.78518	0		6.6214947
124447		Hs.100747	0		22.18565682
291880	P55001	Hs.83551	2	Y	5.113603275
502333		Hs.199041	0		8.703567953
501890		Hs.227182	0		9.832207792
770789		Hs.711124	1		5.669411118
811020		Hs.157068	0		5.095156191
856135	U09564	Hs.75761	1	Y	6.537364852
590264	P08493	Hs.75742	1	Y	319.2297619
46931		Hs.22856	0	Y	6.33836443
73659		Hs.5510	0		7.825357622
51511		Hs.21035	0	Y	7.883186234
50602		Hs.21051	0	Y	6.331189338
252515	Q16719	Hs.81771	0	Y	30.45481813
433253	P09467	Hs.574	1	Y	6.646462351
325182	P19022	Hs.161	0	Y	54.23107451
39885		Hs.106642	1	Y	5.108561755
724888	P13584	Hs.687	1	Y	15.85153056
770394	P55899	Hs.160741	0	Y	5.545828637
51700		Hs.5740	0	Y	7.120940176
855745	P01859	Hs.140	6		44.06651214
365515	P21781	Hs.164568	4		17.45452637
45391		Hs.21192	0	Y	5.671072219
34442		Hs.22920	0	Y	26.77227609
745019	AF001434	Hs.155119	0		13.4306222
47428		Hs.5921	1	Y	7.701448877
40100		Hs.54865	0	Y	10.66470798
345626		Hs.26770	0		7.03684739
530185		Hs.79197	0	Y	10.21794823
78565		Hs.178470	0	Y	9.577243426
739155		Hs.32963	0		14.04671992

Table I

78844	Hs.8503	0	19.23873936
83358	Hs.76704	1	5.066144758
841663	Hs.10624	0	5.670593904
796079	Hs.107755	0	13.33337423
47461	Hs.91627	0	9.463326962
842946	Hs.172405	2	5.43627614
509688	Hs.74466	0	32.77384818
22759	Hs.110454	0	6.107318818
51800	Hs.26956	1	12.67426159
612809	Hs.55205	0	7.139710582
838774	Hs.81946	0	22.57928794
796712	Hs.193180	2	5.969629989
23116	Hs.92096	0	6.924312928
46715	Hs.226063	0	6.980774523
309368	Hs.157029	0	7.314794435
260170	Hs.184476	0	5.157790852
951305	Hs.21400	0	10.61201098
286608	Hs.50152	0	6.256586507
262061	Hs.42622	0	12.74380124
950594	Hs.170313	0	8.691899152
781401	Hs.6295	0	6.299838826
743309	Hs.97814	0	11.7569098
489794	Hs.69298	0	6.47202049
323251	Hs.141707	0	11.71472861
768260	Hs.95055	0	6.352064687
1031966	Hs.112765	0	7.141764946
26884	Hs.176977	0	10.83093523
286404	Hs.50141	0	5.081841412
665356	Hs.81791	2	7.083580279
754393	Hs.29645	0	9.618169025
754400	Hs.98866	0	5.223046119
767706	Hs.5944	0	7.174663252
43966	Hs.30495	0	6.853431198
271744	Hs.115263	0	9.365329325
1472775	Hs.114599	1	7.623108683

Table I

767775		Hs.12101	0	Y	7.65459267
785542		Hs.22269	0		5.074303537
289845	P51693	Hs.74565	0	Y	20.30305918
767806		Hs.219907	0	Y	5.369327002
726508		Hs.49725	0	Y	6.22633869
281565		Hs.46798	0	Y	5.936175611
604959		Hs.32405	0	Y	15.81647508
838296		Hs.57877	0	Y	6.040409697
282100		Hs.33062	0		5.56242391
241424	AF077048	Hs.33713	0	Y	5.845939838
730346	AF117615	Hs.108675	0		5.761633984
758271		Hs.98380	0		27.46446372
365085		Hs.26102	1		8.323401071
773152		Hs.98434	0	Y	5.168000064
1122782		Hs.129586	0		5.615074649
838811	P05090	Hs.75736	1	Y	192.3342175
823856		Hs.43658	0	Y	8.177377109
281625		Hs.153022	0	Y	6.513746023
666451		Hs.6763	0	Y	7.084388697
1409509		Hs.73980	1	Y	23.56420483
1161564		Hs.10587	0		15.43770328
626390		Hs.202949	1		12.32690192
262968		Hs.42721	0	Y	8.315119488
731240		Hs.6763	1		7.806915887
796266		Hs.22260	1		6.903797979
950450		Hs.188006	4		118.2281602
951241		Hs.62273	3		10.93298468
418318		Hs.103239	0		9.166802147
784065		Hs.180532	1		7.997173789
510088		Hs.29088	0		7.691501332
43865	AF063228	Hs.65248	0		10.77433867
593929		Hs.72865	0		10.47907121
753248		Hs.100113	0	Y	17.21478312
823925		Hs.173380	0		7.502731465
32551	P00558	Hs.101230	0	Y	8.444090673

Table 1

37539	Hs.7004	0	Y	19.62705961
627018	Hs.161675	0	Y	5.14905806
493160	Hs.2248	3		18.96801812
359579	Hs.21492	0	Y	7.528344801
726551	Hs.187655	0		5.610203468
39191	Hs.194327	0	Y	11.03712751
1461048	Hs.93082	0		24.39256245
44387	Hs.30504	0		11.52123475
785701	Hs.107325	1		14.36222132
785703	Hs.136253	0		13.38234153
754525	Hs.173059	0		5.628045886
1461664	Hs.1327	0		6.267875851
39442	Hs.21896	0	Y	14.46547098
1404841	Hs.119014	0		10.13465348
39453	Hs.101282	0	Y	9.474806165
768008	Hs.55220	0		6.245507438
48033	Hs.23606	0		9.046088367
785760	Hs.80595	6	Y	7.070955341
344010	Hs.58086	0		6.904414625
344834	Hs.58093	0	Y	14.79546631
357985	Hs.59548	0	Y	5.308317705
743025	Hs.177482	0		6.801650593
730055	Hs.46901	1		10.47684232
282283	Hs.46832	0		16.63799168
841253	Hs.34549	0		8.628998553
841232	Hs.27260	0		6.378714279
772925	Hs.46967	0		6.193985413
344806	Hs.58213	1		70.53882307
270921	Hs.108901	0		6.086765784
418384	Hs.110069	0		5.468821158
263047	Hs.108923	0		7.060332693
593815	Hs.72639	0		5.373366277
267085	Hs.114062	0		6.303206042
951102	Hs.112863	0	Y	7.163345551
753271	Hs.74947	1		6.416120214

Table 1

744357		Hs.112949	0	13.71313979
665148		Hs.104106	0	5.083289775
898195		Hs.44268	0	5.084523466
753320		Hs.106650	0	5.854120138
1161830		Hs.68877	0	55.46099391
31486		Hs.22112	0	5.22263647
278430		Hs.6641	0	5.867931305
31652		Hs.22298	0	6.019150865
788524		Hs.99291	0	15.60511589
813490		Hs.191337	1	5.618210734
788558		Hs.21288	0	7.478763274
811953	P33991	Hs.99433	1	8.010667351
788575		Hs.37636	0	7.214357894
813518		Hs.13288	0	5.200851932
324492	P08254	Hs.83326	0	5.265993784
788617		Hs.32125	1	9.611947841
813543		Hs.99410	0	5.041740362
858450	L10333	Hs.99947	0	6.91159879
34526	AF140242	Hs.107318	0	6.700127027
298903		Hs.111867	0	7.500075813
796170		Hs.16578	1	13.08165833
487035		Hs.62651	0	6.62927821
255285		Hs.112083	0	7.612524669
488683		Hs.62716	0	17.10930111
595037	AF095448	Hs.194691	0	5.09346396
743027		Hs.98004	0	5.097730563
781605		Hs.103378	2	5.759226089
731231		Hs.112196	1	5.561690603
267864		Hs.225695	0	6.681682597
124567	P35555	Hs.750	1	6.537024499
785707	AF044588	Hs.5101	2	7.626199448
754563		Hs.31498	0	8.890649289
754581		Hs.6338	0	10.32531108
754582	P22794	Hs.41848	1	7.930685207
71869		Hs.107527	0	27.01835295

Table 1

785795	Hs.15929	2		35.18082892
768111	Hs.98314	1		15.97680371
754594	Hs.170057	0	Y	6.394967547
754628	Hs.25933	0	Y	5.244927389
431397	Hs.80120	1	Y	5.869100283
41905	Hs.26679	0	Y	24.03863291
434768	Hs.9914	0	Y	5.974791662
1416502	Hs.76828	0		8.573276556
625616	Hs.34744	1	Y	7.514554559
285049	Hs.27413	0		5.003639494
840726	Hs.47026	0	Y	9.980084697
784178	Hs.27860	0	Y	17.94202511
344505	Hs.58314	0	Y	16.51741389
595606	Hs.130435	0		20.32933127
781447	Hs.98610	0		5.230028362
281947	Hs.81230	0		5.435591108
595623	Hs.72651	0		9.315426329
609209	Hs.189991	0		14.26772375
773147	Hs.86211	0		6.611724559
243410	Hs.222293	0	Y	5.011093355
730741	Hs.118554	0		7.52913803
359610	Hs.110248	2		8.271734766
781339	Hs.1197	0		7.355756664
199635	Hs.173609	0	Y	22.19509456
752802	Hs.6314	0	Y	14.84556402
753411	Hs.48730	0	Y	5.879304595
813408	Hs.6314	0	Y	5.088411732
753417	Hs.153863	0	Y	11.26569657
811891	Hs.26129	1	Y	5.974811435
812008	Hs.26243	0	Y	6.53110551
665674	Hs.25021	0	Y	6.692663303
767853	Hs.100926	0	Y	5.103780315
34901	Hs.78006	0		77.83451556
35010	Hs.106604	0		73.70144488
34832	Hs.22823	0		7.585085578

Table I

378461	P10451	Hs.313	0		Y	28.48795908
594693		Hs.55468	0			24.02110686
328287		Hs.170042	0	Y		5.316836461
593185		Hs.182356	0	Y		5.092966861
287365		Hs.23084	0			8.980673577
510575		Hs.17230	0	Y		8.293085901
796732		Hs.82905	4	Y		35.80052117
127209		Hs.20117	0			26.72695624
1048586		Hs.431	1	Y		6.501948912
267865	U69140	Hs.93692	1	Y		5.06222405
133547	P35548	Hs.89404	1			5.146999351
37814		Hs.12549	0			5.514674894
48226		Hs.12554	0			5.087947038
785694		Hs.3972	1			33.98360562
53122		Hs.12581	0			34.18976441
786059		Hs.49349	1	Y		6.042625528
1416782		Hs.173724	0			5.83736681
647397		Hs.101174	0	Y		6.123898971
452848	D50922	Hs.57729	2			8.858830022
767176		Hs.78276	0	Y		5.878725356
358217		Hs.58367	0	Y		5.886129992
428592		Hs.60006	0	Y		7.019482152
238661		Hs.39093	0			5.761022918
838982		Hs.48950	0			8.080852817
283142		Hs.47234	0			6.888567489
950410		Hs.199647	0			5.016718543
594684		Hs.73239	1			5.516946007
504253		Hs.5672	1	Y		5.204261265
27404	AC0D4891	Hs.106552	0	Y		5.333145531
786809		Hs.16869	0	Y		8.044278612
810235		Hs.99621	0			6.04273576
280082		Hs.48008	0	Y		10.39076902
752625		Hs.206778	0	Y		6.334043329
247177		Hs.48094	0	Y		7.022295211
753909		Hs.105641	0	Y		10.30079968

Table I

796505		Hs.12680	1	5.420851401
768271	AF044310	Hs.29892	1	11.87322067
796388	Q92664	Hs.75113	2	8.510749465
796613		Hs.82985	0	13.73184471
415613		Hs.14896	0	6.01108203
35147		Hs.23882	0	6.20402449
1410444		Hs.1257	0	35.08042366
768356		Hs.173319	0	6.578179839
108864		Hs.13456	0	14.19518223
35484		Hs.23892	0	8.697444715
813697	AB018289	Hs.49500	3	8.523022451
768432		Hs.103316	0	20.88536119
813737		Hs.96908	0	15.82439139
1469234		Hs.74124	0	9.346425417
796843		Hs.5025	1	5.946270589
593431	Q16739	Hs.23703	4	7.757041113
742685	P98082	Hs.23786	0	5.287667475
773443		Hs.23871	1	8.052503677
321693		Hs.112347	0	14.17518833
730971		Hs.178098	0	13.731113
503699		Hs.103823	0	7.17089341
742672		Hs.97722	0	6.478973955
726571		Hs.8203	0	5.270588844
257705	Q14123	Hs.48324	0	6.30565246
767181		Hs.6909	0	7.684385469
786265	AB018293	Hs.173416	2	7.51429759
42415	AB011156	Hs.26835	0	14.23783714
487297	P40123	Hs.227526	0	5.10248449
277226		Hs.40183	0	8.178828759
346997	AB024518	Hs.58589	3	74.13137017
488390	AB015343	Hs.40342	0	5.701206312
629944		Hs.26941	0	6.612496103
897656		Hs.183738	0	7.106962713
1049185		Hs.112208	1	44.96042878
1056172		Hs.112242	0	12.22112635

Table 1

626208		Hs.110771	0	Y	6.804538762
841621		Hs.100686	3	Y	25.5689756
742977	AB015330	Hs.77978	0		5.255589141
594600		Hs.101590	0		9.089348983
1048603		Hs.112608	0	Y	5.541888783
897587		Hs.23972	0		6.775934776
131452		Hs.202949	1		29.73746332
682479		Hs.66999	0	Y	11.05433707
813730		Hs.76550	0		8.315718097
752701	AB015982	Hs.32215	0	Y	6.775635988
753076		Hs.98874	0	Y	25.71610616
754111		Hs.11217	0	Y	5.203623497
53385		Hs.106620	0	Y	5.404503859
687625	S67069	Hs.61233	0		6.384116312
754126		Hs.34806	0		11.72281138
450060	P08603	Hs.194272	1		33.17881206
812954		Hs.88253	1		45.63636839
1323448		Hs.17409	1	Y	5.91681239
1323591		Hs.76353	5		7.758862071
841146		Hs.19221	0	Y	5.874257083
306052		Hs.54709	0		6.277285679
729924		Hs.24872	0	Y	8.454174796
838592	P23634	Hs.184567	0	Y	6.304797892
279224		Hs.46626	0		5.63294217
595181		Hs.20072	1		8.119183684
838689		Hs.179902	0	Y	8.584045749
840968		Hs.104627	0		6.066650028
743290		Hs.104706	0	Y	6.379263149
742783		Hs.107376	0	Y	6.041943958
505158		Hs.71730	1		15.42398129
505227		Hs.71738	0		7.574568517
529302		Hs.67317	0		7.951340421
742596		Hs.97774	0		9.480935051
296556		Hs.203411	0		7.659605772
429678		Hs.60532	0		5.432540908

Table 1

754378	Hs.146688	0	Y	8.488984508
53319	Hs.20988	0		5.060038533
898288	Hs.8042	0	Y	7.257817428
1321598	Hs.1183	0		5.822383156
37801	Hs.26640	0	Y	6.0090261
38015	Hs.21527	0	Y	11.59223967
786657	Hs.99258	0	Y	8.033080482
1343488	Hs.177691	0	Y	5.983281755
786663	Hs.9932	0		7.154441226
787860	Hs.45057	0		7.004981591
767419	Hs.63970	0		5.917940203
357056	Hs.30528	0	Y	5.19305244
289480	Hs.48344	0	Y	5.327966622
278809	Hs.161496	0		14.3304358
253246	Hs.41228	0		5.706656583
488246	Hs.172870	2	Y	5.71875413
773805	Hs.30654	0		5.484153429
253314	Hs.141376	0	Y	5.403061544
251435	Hs.42146	0		8.021864836
257808	Hs.102455	0		6.562807493
276412	Hs.102550	0	Y	5.823009508
627687	Hs.20303	0	Y	5.845381527
785866	Hs.31386	1	Y	8.192959579
752640	Hs.104800	0		10.42971126
897641	Hs.103804	1		6.088517875
813721	Hs.227716	0	Y	6.481889937
279504	Hs.46882	0		5.633081677
171816	Hs.31622	0	Y	5.868409798
450777	Hs.7647	1	Y	6.719588185
53384	Hs.91343	0		5.210190835
823688	Hs.25253	2	Y	13.70799286
1456160	Hs.71	0	Y	5.577389547
38347	Hs.106309	0		57.61484702
823771	Hs.112196	1		5.073444827
1473274	Hs.9615	0		8.753194705

Table I

30275	Hs.100866	0	Y	10.55620586
280799	Hs.46727	0	Y	6.570359727
488301	Hs.26142	1		5.17092538
143380	Hs.185695	0	Y	6.730398763
951108	Hs.67928	0		12.94303055
262060	Hs.102267	0		114.1903856
201931	Hs.114005	0	Y	5.983242743
773423	Hs.104866	0	Y	5.215563287
272694	Hs.108636	0	Y	6.27358973
48404	Hs.106619	0	Y	12.58241074
726582	Hs.12887	0	Y	6.516761159
262966	Hs.42738	0	Y	6.166457232
27769	Hs.167406	5		6.849454026
785930	Hs.77637	0	Y	36.89827693
41569	Hs.4243	0	Y	6.778788549
30850	Hs.159581	0		6.0479446
490779	Hs.49169	1		6.967357731
627306	Hs.169286	0	Y	5.738033416
73527	Hs.173894	0	Y	5.159037961
39313	Hs.154655	0		5.479716085
43828	Hs.188757	0	Y	6.042417699
785368	Hs.104741	0		20.26025719
788234	Hs.34853	0		12.04314737
838446	Hs.31287	2	Y	5.743473622
366901	Hs.61389	0		9.105694536
841220	Hs.31500	0		9.901759766
418159	Hs.6139	0	Y	10.70338043
366801	Hs.61557	0	Y	5.266056888
782804	Hs.99158	0	Y	10.81862606
843054	Hs.83575	0		5.30978647
796711	Hs.82772	0		8.638006261
1031791	Hs.112742	0		6.440237118
1031516	Hs.112671	0	Y	8.186561156
752754	Hs.141269	0		5.564201186
1031548	Hs.112678	0		5.244301439

Table I

812143	Hs.14146	0	Y	5.592159568
1031595	Hs.112715	0	Y	5.138658767
813187	Hs.75866	1	Y	6.738536294
1455566	Hs.258	0	Y	6.196064309
1455835	Hs.17958	0	Y	25.99784944
38740	Hs.79029	0	Y	6.819665953
30428	Hs.22517	0	Y	5.439335297
1472689	Hs.182778	1	Y	31.71914518
470092	Hs.25220	1	Y	14.18721241
166043	Hs.27268	0	Y	18.42944168
205327	Hs.15806	1		5.895612301
701625	Hs.89385	0		5.633328161
712401	Hs.162808	2		5.268120549
713213	Hs.19399	0	Y	19.57239207
160532	Hs.176588	0	Y	33.66388374
713263	Hs.89040	0	Y	10.49952302
1240283	Hs.122363	0		6.212028406
1240538	Hs.184679	1	Y	6.361859303
435736	Hs.114941	0		5.25455401
416374	Hs.11663	5	Y	74.44793889
502286	Hs.25431	0		6.312661476
824792	Hs.8750	0		5.209992017
132636	Hs.75799	0	Y	6.737262483
191546	Hs.213207	0		5.295566039
191787	Hs.13640	0	Y	7.831734003
222157	Hs.21894	1		5.914213423
191850	Hs.117815	0		11.11171333
361587	Hs.30446	0	Y	5.258270559
451546	Hs.183639	0	Y	5.466869055
431425	Hs.221594	0		5.8320294
289499	Hs.118113	0		5.486625855
431505	Hs.18948	0	Y	7.3996939
451587	Hs.7962	0		18.8447337
281449	Hs.30154	0	Y	7.269877335
431553	Hs.163610	0	Y	7.168833618

Table 1

45605		Hs.17537	0	8.45769109
49485		Hs.7133	0	6.868639608
206172		Hs.14743	0	7.331060389
746148	AB011421	Hs.120966	0	6.427990108
746232		Hs.194035	0	6.743711299
489631	P13511	Hs.81800	0	5.789645367
160192		Hs.84630	0	11.05538312
489755		Hs.8850	1	20.8955182
506032	Q98595	Hs.20716	3	8.522416133
206779		Hs.27902	0	5.186164654
395625		Hs.172646	3	6.009847075
290866		Hs.85181	1	5.147879987
450398		Hs.227459	0	7.188236607
278496		Hs.28731	1	6.175790152
416479		Hs.14977	0	11.18111615
744805		Hs.19641	0	6.617072132
361653		Hs.125066	0	9.272073353
223043			0	22.3169845
149735		Hs.30164	1	10.51469781
135253		Hs.111223	0	9.737607355
195557		Hs.46541	0	13.10395761
149544		Hs.25155	1	7.422799854
194717		Hs.34333	0	11.30160113
194811		Hs.20526	0	42.92560997
770380		Hs.112023	0	5.922204549
289759		Hs.21368	0	6.144495783
281605		Hs.100217	0	7.696575035
451707		Hs.19978	0	6.287471852
267666		Hs.22891	0	5.007874299
451753	U40282	Hs.46531	3	14.28682569
281737		Hs.54037	0	5.720716404
814992		Hs.178331	0	5.41469248
684277		Hs.87507	0	8.507193903
815036		Hs.72402	0	5.476426926
506369	P14543	Hs.62041	1	7.620583677

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Table 1

815794	P80303	Hs.3164	1	Y	6.3323457
757500	P28001	Hs.121017	0	Y	5.212288577
824109	AB011141	Hs.34871	0	Y	39.27799786
824479		Hs.177926	0	Y	5.721291741
824530	AB011097	Hs.226067	1	Y	5.223824505
190692		Hs.169531	2	Y	6.54853753
436890		Hs.189299	0	Y	8.820463809
395902	AF072505	Hs.71233	0	Y	7.289110857
395941		Hs.121231	0		6.004992552
278531	P09669	Hs.82758	2		5.787364435
417777		Hs.118371	0	Y	12.15004989
395967		Hs.192903	0		9.093372841
450515		Hs.64193	0		5.104920389
324513		Hs.40098	3		66.5807336
324543		Hs.118513	0		5.644193296
435992		Hs.21126	0		16.60389136
325111		Hs.55950	0	Y	20.06930485
704023		Hs.96561	0	Y	97.02449466
825847		Hs.56966	0	Y	7.882424626
825697		Hs.10590	0		7.381467073
293924	P22303	Hs.154495	0		19.60727934
231903		Hs.41045	0		5.593738765
1048495		Hs.168554	0		6.725362918
150003		Hs.29724	0		5.577887563
383199		Hs.129056	0		7.869955829
770875		Hs.119387	0	Y	8.26393191
281908		Hs.41271	1	Y	10.97038738
703384		Hs.55356	3	Y	8.641759348
712292		Hs.62661	1	Y	5.752992708
854897		Hs.28264	6	Y	14.56408964
855422		Hs.8175	0		6.8250316
855510		Hs.5307	1	Y	18.65001543
1292432		Hs.198132	1		5.531810431
190762		Hs.32856	0		5.089826814
191015		Hs.32763	0		7.412516095

Table I

825606	P52732	Hs.8878	0	5.063263663
825726	P54277	Hs.111749	1	6.165887656
294578		Hs.75621	0	180.1662123
191107		Hs.79532	0	8.068253174
436097		Hs.163796	0	8.280499254
725841	AB014562	Hs.56966	0	5.374041152
739123	Q16739	Hs.23703	4	6.564097933
450754		Hs.12913	0	5.099634843
449034		Hs.122831	0	6.000589924
825781		Hs.29417	5	5.070577448
1049006		Hs.71746	1	5.504628285
826194		Hs.118739	1	5.58188398
826273		Hs.30464	0	7.015268541
1049287		Hs.72026	0	5.30104167
151240		Hs.25248	0	6.481824382
150897	AB015630	Hs.69009	0	5.204174014
155806	P29728	Hs.172285	1	11.20424913
363007		Hs.106576	0	5.032173895
196577		Hs.29549	0	5.991962606
269300		Hs.75866	1	6.058361403
249784		Hs.16580	0	8.178950224
269751		Hs.125230	0	6.42952003
283191		Hs.70337	0	5.072740493
452016		Hs.92030	0	6.041476064
269425		Hs.114362	0	88.5441592
298045		Hs.18705	0	18.35126743
858396		Hs.7745	1	9.78339654
824886		Hs.32425	0	6.987059635
985516		Hs.97101	0	8.420285721
886226		Hs.104415	0	7.054503787
645259		Hs.58350	0	6.395701033
168616		Hs.182859	0	10.02291767
788269	P35265	Hs.1948	1	7.564262159
220069		Hs.30029	0	5.697906347
897720	U04811	Hs.76313	5	6.798908281

Y

Table I

739450		Hs.110379	0	Y	9.184224987
739578		Hs.11950	0	Y	6.02759675
343974		Hs.17184	0		6.352858202
740780	AB012917	Hs.57771	1	Y	15.55643658
450899		Hs.191901	0		5.620766232
279963		Hs.48026	0	Y	13.30971522
741919	AC005954	Hs.25527	0	Y	8.11191836
826995		Hs.16726	1	Y	8.551959356
754625		Hs.70604	3	Y	12.91269072
136506		Hs.163719	0		5.996233303
136508	P29728	Hs.172285	1		11.46587025
151477		Hs.30343	0	Y	6.248219431
152289		Hs.106106	0		16.817179
283208		Hs.29397	0		5.025678297
269733		Hs.42189	0	Y	6.250029612
283748		Hs.4257	0		9.794909542
270558		Hs.28556	1	Y	38.94166722
261567	AF049895	Hs.197827	0		5.515460441
853367		Hs.9071	1		28.02091043
700299	AF031588	Hs.24143	2	Y	8.677794207
825031		Hs.181022	1		6.618472948
846657	AF026852	Hs.14511	0		19.01916708
263716	X99135	Hs.108885	0	Y	5.819472832
161455		Hs.92683	0	Y	6.174331293
362402	AC002126	Hs.20707	0	Y	6.246540374
1470060		Hs.169476	0	Y	5.815778814
214809		Hs.117872	0		5.302895047
1456118		Hs.9280	0	Y	5.19482144
277537		Hs.155244	1		7.552549966
450962		Hs.97266	0		39.51814097
741962		Hs.172844	0		10.24068912
397488		Hs.203492	2	Y	5.212739753
878496	AB007930	Hs.107088	0	Y	5.887144586
815740		Hs.86429	0	Y	5.845137158
380890		Hs.23247	0		16.40998267

Table I

137704		Hs.221202	2	Y	24.33949266
170826		Hs.6630	0	Y	7.884702339
302885		Hs.54580	0	Y	5.144014857
303199		Hs.24907	0		7.210309807
432811		Hs.193213	0		5.131208887
625176		Hs.3542	0	Y	5.204070993
700668	AF018157	Hs.167742	0		8.929586948
897807		Hs.213952	0		7.294741593
454970		Hs.9029	0		20.17231124
280934		Hs.3828	0		8.057546476
192401	P53602	Hs.124979	0		12.4199679
470001		Hs.169825	0	Y	5.129048502
1474174		Hs.111301	0		15.69533886
814251	U33017	Hs.196349	0		5.835759537
878652	L33799	Hs.91299	0		20.92615171
755444		Hs.75968	1		5.075146571
280528		Hs.53996	0		9.301127644
431215		Hs.117261	0		12.8177236
277173		Hs.181357	0		7.099767471
878605		Hs.29005	1	Y	12.66212374
878631	AC002073	Hs.100623	0		5.576233484
878848	AF106966	Hs.75922	0		8.263649308
380883		Hs.130847	0		5.494877227
154173		Hs.25469	0		14.57156641
380884		Hs.63063	0		6.860979711
199505		Hs.30443	0		5.15451404
140018		Hs.104266	0	Y	5.828313072
381036		Hs.227459	0	Y	13.17442605
381062		Hs.59773	0	Y	5.051108502
262542		Hs.127310	0	Y	5.020009469
263883		Hs.29403	0	Y	11.10872909
452676		Hs.122359	0		6.765763792
263341		Hs.26368	1		37.40561117
435673		Hs.82321	0		11.11817289
815051		Hs.37262	0	Y	8.147635847

Table 1

288705	Hs.158213	1	91.71402828
700967	Hs.41068	1	6.545263028
825615	Hs.70258	0	5.338540282
460002	Hs.55968	0	29.84236311
701256	Hs.30514	0	16.42742399
174311	Hs.31696	0	6.552059648
825411	Hs.79024	2	5.849596697
684879	Hs.69089	0	13.18203513
741880	Hs.155691	2	6.266278518
132015	Hs.9238	2	7.915166689
814780	Hs.348	0	8.976924552
360743	Hs.25726	1	7.122573491
450025	Hs.187616	0	12.16324086
280889	Hs.46721	1	20.70537863
431231	Hs.6059	0	17.33060408
431245	Hs.118554	0	8.46272442
413292	Hs.62604	0	20.19877455
413080	Hs.220567	0	12.08883896
451557	Hs.18160	0	16.22081248
415589	Hs.91668	0	9.758358543
4097276	Hs.110443	0	6.74771359
25664	Hs.78006	0	41.96780379
824358	Hs.102248	0	5.451531148
490789	Hs.7393	0	8.618104244
824376	Hs.180703	0	7.538784111
129032	Hs.76353	5	7.828374081
129125	Hs.124601	0	8.709811846
392630	Hs.120910	0	51.14700619
204790	Hs.24248	2	10.17127063
392647	Hs.43307	0	15.90531046
322192	Hs.24248	2	11.5766456
815835	Hs.10927	0	8.351245876
288959	Hs.26339	0	5.754083823
265668	Hs.21861	0	6.169324732
266135	Hs.127356	0	13.73276849
	P52272		
	P06280		
	P40424		
	Q16566		
	AJ132819		
	AF151841		
	P05154		
	AC005594		
	P48681		

Table 1

825742	P43005	Hs.91139	0	Y	12.50695489
460395		Hs.106534	0	Y	5.012459231
825857		Hs.22301	0		17.56505194
826103		Hs.22701	0		8.366723174
859832	U35246	Hs.6650	0		6.285392108
826109		Hs.41371	0	Y	20.46308344
489509		Hs.28264	0		10.1354516
825270		Hs.109315	1	Y	24.12164595
825742		Hs.40368	1		5.279360401
825742	AF059244	Hs.121602	0		5.50741009
121857	P14798	Hs.16244	0	Y	7.675934078
815127		Hs.57572	0		13.80192408
824111	AF153603	Hs.193823	5		5.362017963
845432		Hs.26168	0		5.598830854
122321	P13611	Hs.81800	0	Y	8.167873554
453710		Hs.39957	0		10.25335097
824421		Hs.11817	2		9.067261273
878417		Hs.96413	0		7.31949918
449487		Hs.121979	0		13.89784468
506361		Hs.16726	1		5.886521389
1458405		Hs.81771	0		59.47796478
1472928		Hs.188817	0		6.097038394
1458490		Hs.127699	0	Y	7.252151733
1473146		Hs.3454	0		5.117723997
1473257		Hs.22120	0		8.604690205
1631132		Hs.11388	2	Y	6.41281225
488964		Hs.795	0		6.383082124
506569		Hs.87597	1		5.455903487
1049143		Hs.182859	0		48.31247981
1556056		Hs.37044	0		5.551718291
1556526		Hs.127032	0		11.59792923
731180		Hs.31895	0		12.28837987
1558151		Hs.41691	0		16.23350733
50764		Hs.101174	0		10.05162341
1558855		Hs.6139	0	Y	6.123222941

Table 1

50772	AC006033	Hs.13467	2		Y	6.062768709
48183		Hs.31141	1			9.719778158
868770		Hs.32295	0		Y	35.79811566
448117		Hs.114124	0		Y	5.228165331
858567		Hs.180391	1			7.114037446
51773	AC005154	Hs.12770	1			28.69862593
361526		Hs.59788	0			5.27916223
971279		Hs.198023	1			5.183050258
395573		Hs.22954	0			5.224192797
1020251		Hs.117209	1			9.000881382
1519013		Hs.13580	0		Y	10.58288826
701115		Hs.105088	0			8.775913536
481284		Hs.48243	0			8.795646133
193518	Y13153	Hs.107318	0			15.26707307
361539	X98248	Hs.104247	0			7.829576251
461592		Hs.2178	5			14.80108909
345487		Hs.5163	0		Y	6.131834446
461864		Hs.8123	0			5.756671479
462939		Hs.191915	0		Y	6.671782615
24838		Hs.188536	0		Y	5.444150866
450278		Hs.119773	0			6.10288027
1456701		Hs.122607	0			8.206503274
1474156		Hs.118867	0		Y	6.376639082
1456776		Hs.5372	0		Y	8.275141287
1474331		Hs.128757	0		Y	6.436015465
1474424		Hs.69476	0			5.065447843
186767	P01912	Hs.180255	0			197.7255015
131344		Hs.7055	1		Y	8.079122383
1293191		Hs.117229	0			5.514082664
251555	P23760	Hs.198	2		Y	7.971641309
1055719		Hs.116198	0			9.241196155
1673251		Hs.75437	0			7.628890121
49796		Hs.21948	0			23.01221961
852995		Hs.116629	0		Y	5.057198244
448409		Hs.113427	0		Y	6.9817393

Table 1

50541		Hs.13254	0	Y	5.370881242
448489		Hs.184640	1	Y	47.16025386
32226		Hs.19487	0		5.640754751
454317	P25311	Hs.228711	0	Y	84.11604063
167205		Hs.7833	0		53.08435322
859892		Hs.187807	0		6.427881546
363003		Hs.127833	0		37.91296312
397604		Hs.103184	0	Y	6.031781991
32588	AB022317	Hs.6462	0		5.790012459
1020519		Hs.122371	0	Y	5.685598166
32661		Hs.26312	0	Y	8.32647517
171973		Hs.117663	0		5.526172623
173145		Hs.7357	0	Y	6.457967194
1500162		Hs.130863	0		8.612591234
745283		Hs.112094	0		7.359379677
746217		Hs.119424	0		5.375359776
712600		Hs.110099	0	Y	13.10215532
32887		Hs.22941	1	Y	5.132335154
845780		Hs.121663	0		6.188727561
489533		Hs.5825	1	Y	5.080593165
462977		Hs.22333	0	Y	9.842269072
32812		Hs.22960	1		8.965535855
233687	AF055581	Hs.13131	0		5.849791476
878640		Hs.19114	0		6.002569349
469296		Hs.114777	0		8.495966962
347351	AF098915	Hs.201671	0		7.327684002
33821		Hs.21929	0	Y	5.942782502
864430		Hs.179902	0	Y	5.034268893
562318		Hs.48928	0	Y	6.310035183
266500		Hs.8236	1	Y	13.77109613
110298		Hs.82171	1		6.199336199
1457276		Hs.154737	2	Y	17.99979744
1474987		Hs.71520	0	Y	15.56939368
1600281		Hs.198793	0		5.383648409
1574594		Hs.82045	0	Y	15.18681826

Table 1

1580342	Hs.74019	2		12.94345602
882588	Hs.40342	0		14.09077786
586742	AF118023	0	Y	6.191560522
447173	Hs.16420	0		23.00159789
856115	Hs.222038	0		14.05499285
378271	Hs.20166	0	Y	5.095352541
461833	Hs.148428	0		11.40774744
867606	Hs.193307	1		7.595751869
1536240	Hs.180952	1		11.0793017
1048592	Hs.111461	0		8.552932316
1505360	Hs.121554	0		12.12374384
645181	Hs.36980	1	Y	7.754741355
1526789	Hs.86263	0	Y	9.832714589
1555427	Hs.2537	1	Y	5.911340504
745087	Hs.65119	5	Y	18.23984859
40014	Hs.116160	0		6.489013345
366414	Hs.91622	1	Y	5.501794062
38824	Hs.108106	0		12.62385442
471568	Hs.164502	0		6.844791965
39833	Hs.109706	1	Y	34.77026468
435750	Hs.95594	0		5.422336393
624480	Hs.15921	0		7.269437488
725117	Hs.85529	0		5.332403548
725143	Hs.30898	0	Y	80.14724289
1476195	Hs.36563	0	Y	7.123888718
1420830	Hs.117955	0	Y	6.469901899
1475308	Hs.165464	0	Y	5.032392322
1421061	Hs.186607	0		5.784630739
1276665	Hs.125079	2		5.369870172
744024	Hs.12243	0		30.40105787
1034465	Hs.158213	1	Y	7.420006216
884836	Hs.27189	0		5.185276052
26736	Hs.102737	0		7.199790686
462237	Hs.16936	0		6.382360005
179212	Hs.30085	1	Y	6.551690304
	Hs.9398	0	Y	

Table I

482325	Hs.11638	0	Y	16.45544402
379484	Hs.174188	0		20.99391799
1501546	Hs.123066	0		5.081006369
239568	Hs.3346	0		6.550279833
753428	Hs.99769	0		12.12815709
897219	Hs.180895	5		26.72251445
240896	Hs.108118	0		5.107153231
377573	Hs.124134	0	Y	5.842023308
754541	Hs.109526	2		13.05897037
451357	Hs.119885	0		6.914966414
447208	Hs.47504	0	Y	5.011813612
1603583	Hs.14388	1		5.373659761
1635874	Hs.8693	0	Y	6.299540768
1605426	Hs.22972	0	Y	6.652996237
1606080	Hs.166351	0		7.313928324
1636156	Hs.10888	0		5.170112087
1470195	Hs.127074	0	Y	5.422430219
1470220	Hs.127286	0		5.074077471
1420527	Hs.102482	0		5.982393692
1591599	Hs.89497	0		12.022342
502198	Hs.12112	0		5.730410439
1034445	Hs.122110	0		5.531363069
1435870	Hs.184507	0		5.661424301
1469376	Hs.112405	3		30.84969845
1467789	Hs.22599	0		9.950709034
1469249	Hs.57691	2		7.447232733
744918	Hs.116080	0	Y	6.339484513
1470657	Hs.154424	0		7.563416595
854831	Hs.128685	1		15.84699608
855079	Hs.16622	0	Y	5.017783002
30673	Hs.12696	0	Y	9.220999304
460039	Hs.117366	0		5.585599307
145743	Hs.120249	0		6.654265488
183281	Hs.32043	0		10.94333193
146882	Hs.93002	0		6.774016895
	O00762			

Table I

147826	Hs.171965	1	13.37547298
1558642	Hs.11365	1	32.68449022
1558655	Hs.7331	0	5.183468959
1593897	Hs.130227	5	6.04402003
824212	Hs.105276	0	5.328480478
41295	Hs.124027	0	9.001146296
377898	Hs.121866	0	5.071870039
377987	Hs.84859	1	11.87888467
743868	Hs.115696	0	6.360477741
743878	Hs.228707	0	12.8878423
124064	Hs.19399	0	5.888562551
1470278	Hs.29076	0	13.66920886
1636812	Hs.12369	0	6.197863546
1435624	Hs.81800	0	7.277612266
1034644	Hs.105431	0	6.819865186
1474284	Hs.194110	0	6.89440299
1606557	Hs.8302	0	6.020586268
1475476	Hs.37107	0	15.63363856
1492468	Hs.125783	0	22.0879966
1499940	Hs.200007	3	13.51182449
745001	Hs.116118	0	10.08320816
878617	Hs.4750	0	7.069745851
34063	Hs.6932	0	7.805239009
855563	Hs.179941	0	9.949852117
148740	Hs.16798	0	5.918304716
190059	Hs.127828	0	5.390965
192306	Hs.23205	0	6.851199883
470049	Hs.173824	0	5.665601162
192419	Hs.7991	0	9.375400952
470121	Hs.6706	0	5.319846265
153646	Hs.172928	1	18.10404951
1468160	Hs.4896	0	5.578163857
1468260	Hs.181131	0	22.49196423
1505173	Hs.105272	0	8.39146578
323599	Hs.1735	1	35.3679555

Table I

814769		Hs.38178	1	9.996755193
745556		Hs.97684	0	14.94855488
84078	P36509	Hs.2056	0	6.703761336
472103	AF054828	Hs.104315	2	9.486559689
745572		Hs.90020	0	6.888914457
824487		Hs.181551	0	8.540439824
24181		Hs.6224	0	5.654321084
347268	P48681	Hs.29076	0	19.56927996
250870		Hs.43397	3	5.213186193
1492288		Hs.8164	0	21.17185403
1492287		Hs.22660	0	7.155548413
1505534		Hs.165615	1	11.93545235
1292121		Hs.120858	0	5.127488587
506128		Hs.25252	0	8.11526289
1631863		Hs.73933	0	7.275155082
1507713		Hs.97220	0	6.406203085
1517595		Hs.184339	1	5.671442656
1636251		Hs.41714	0	6.059028988
1636447		Hs.83381	0	48.77051201
506504		Hs.118910	0	65.41961431
645332		Hs.5025	0	8.767438722
855723		Hs.172035	1	9.739470998
40063		Hs.106419	0	9.228071782
180239		Hs.117719	0	13.47659646
486710	AF140242	Hs.107318	0	5.757333009
1292142		Hs.3232	0	5.81197647
201125	P06899	Hs.155800	0	5.19358417
1569876		Hs.13234	0	5.097864313
1468364		Hs.34578	0	7.05667734
461336		Hs.110379	0	13.06130819
486626		Hs.31900	1	6.604265623
814053		Hs.11638	1	66.21666121
1031727		Hs.44017	0	10.51500612
26149		Hs.6427	0	5.326677685
345663	AJ001016	Hs.25591	0	5.733974845

Table 1

814236	Hs.98638	0		11.92935005
429376	Hs.5470	0	Y	7.294909526
449275		0		7.006039821
22500	Hs.16365	0		6.244342562
858375	Hs.116808	0		5.142348961
23005	Hs.12338	0		6.75989739
1455603	Hs.87729	0		6.626712973
1627705	Hs.16229	1		5.340252412
1636606	Hs.10319	0		9.155736415
1525691	Hs.169003	0		8.440629012
399463	Hs.5415	0		5.664205026
32407	Hs.196177	0	Y	5.999353338
487932	Hs.118739	0	Y	8.023453706
49229	Hs.13405	0		5.183455556
970391	Hs.22586	0	Y	5.100479448

Table 2

Image Clone ID	GenBank Accession Number	Cluster Number	Number of subtracted libraries (out of six) where clone was found	Secretion Predicted?	Known Secretion?	Expression Ratio (Cancer / Normal)
768561	P13500	Hs.340	0	Y		52.2485542
183337	P28067	Hs.77622	5	Y		9.393875457
789369		Hs.34853	0			4.357259417
768638		Hs.182576	0	Y		24.53982213
191664		Hs.108623	1	Y	Y	6.073315437
133273	Q01453	Hs.103724	2			4.381540598
49164	P19320	Hs.109225	5			8.660075989
321580	AC004131	Hs.154050	1	Y		3.543680031
52096		Hs.74615	2	Y		11.07017175
135221	P25815	Hs.2962	2			19.17801122
428466	AJ002305	Hs.6139	0	Y		6.135265461
898092	P29279	Hs.75511	3	Y		3.270427393
361943	Q99587	Hs.170177	0	Y		3.778182599
382773		Hs.180532	1			5.903538944
486208		Hs.2025	1			2.809757479
755863	P10826	Hs.171495	0			6.289018861
85634	P09871	Hs.169756	2			4.468285786
840687	P15941	Hs.89603	1	Y	Y	9.988045093
142788		Hs.9930	0	Y		3.709967078
839991		Hs.179573	2	Y	Y	55.29752219
159608	P05090	Hs.75736	1	Y		24.20477249
284881		Hs.17713	1	Y		3.870972708
127120		Hs.81086	4	Y		7.63684474
45542		Hs.103391	0	Y		45.22705848
768246		Hs.80206	0			3.135448465
897770		Hs.183650	1			8.705069289
485989	P80098	Hs.157319	0			7.034329975
123255	P15923	Hs.4963	3			4.33196737

Table 2

236034	P55851	Hs.80658	3	Y	29.08361672
79726		Hs.11087	0		3.948713807
62076	Q99784	Hs.74376	0	Y	5.520324679
435036	X97324	Hs.3416	0	Y	5.375224311
51320		Hs.169482	0	Y	4.549714522
725321		Hs.198564	0		5.007252448
887593		Hs.6728	0	Y	4.078155684
215000		Hs.198726	0	Y	11.72372393
321908		Hs.136482	0		6.223414068
154472		Hs.748	0	Y	5.512646137
46617		Hs.27222	0	Y	2.876216272
324122		Hs.41716	2		5.016157727
68605	S75725	Hs.119206	0	Y	3.34278498
502664		Hs.35861	0		4.273390944
855547		Hs.181366	1	Y	10.71776564
344589	P13796	Hs.76506	0		4.416560272
22355	P49798	Hs.13251	0		91.33877399
343987	P27487	Hs.44926	0	Y	7.98471956
291057	P42773	Hs.4854	0		7.013249214
324690		Hs.40098	3	Y	4.45239617
52226		Hs.28971	0		4.309485548
491184		Hs.44892	0	Y	3.957517247
503581		Hs.21594	0		4.954622718
415828	X68280	Hs.75874	0		9.857681737
51015		Hs.108507	0		7.205870622
324951		Hs.40098	3		7.593327821
770388	AB000712	Hs.5372	0	Y	3.806152268
773286	AF036241	Hs.184276	1		7.170113029
454672	U13616	Hs.75893	0		2.690800434
725877	P10909	Hs.75106	0	Y	8.627206015
491565		Hs.82071	0		5.663402322
50227		Hs.31444	0		4.592366156
80338	U29091	Hs.7833	2		16.33521176
200656		Hs.21851	2		10.24111701
415229		Hs.37331	0	Y	3.390113619

Table 2

310406	P05231	Hs.93913	1	Y	5.583310047
769686		Hs.125359	0		2.673292284
257422	Q10588	Hs.169998	1	Y	4.518680449
811024	Q10589	Hs.118110	0		18.63938798
33028		Hs.12332	0		3.163163187
511096		Hs.19322	0		3.794013135
345890	U96750	Hs.194695	0		42.61514255
212347		Hs.107824	0		2.900989444
83549	P00736	Hs.1279	0	Y	2.466968054
321900		Hs.42226	0		8.076929757
758347		Hs.178603	5	Y	6.066903669
345849	P28300	Hs.102267	0		20.98185144
80643	U70312	Hs.10283	1		9.394115655
45877		Hs.4302	0	Y	4.870105703
46387	P35790	Hs.77221	0	Y	4.413445292
429349	P49798	Hs.227571	0		28.47153325
47264		Hs.4892	0		5.73497612
25838		Hs.227226	0	Y	3.685535604
491367		Hs.42392	0	Y	4.021467352
309826	Q16363	Hs.78672	2		9.576860587
174627	P13521	Hs.75426	1		8.862549463
52741	X97187	Hs.26630	0	Y	4.186038001
41822		Hs.26102	1	Y	5.424767798
41824		Hs.222260	0		3.693009803
811000	L13210	Hs.79339	1	Y	3.534580555
415204		Hs.20188	0	Y	30.59981426
773330	Q14956	Hs.82226	1	Y	3.471823415
49842		Hs.7908	0	Y	3.658797671
46180		Hs.171495	0		3.806969465
22389		Hs.13222	0	Y	4.056763848
51672		Hs.112278	0	Y	4.762913929
46827	AF118887	Hs.37331	0		5.82434915
590264	P08493	Hs.75742	1	Y	33.29872488
252515	Q16719	Hs.81771	0	Y	8.782686019
433263	P09467	Hs.574	1	Y	16.52405348

Table 2

325182	P19022	Hs.161	0	Y	17,863,42178
798079		Hs.107755	0	Y	3,827,042709
504959		Hs.32405	0	Y	5,593,428795
838611	P05090	Hs.75736	1	Y	24,071,80197
1161664		Hs.10587	0		3,888,857966
950450		Hs.188006	4		26,680,96704
44387		Hs.30504	0		4,024,403017
39442		Hs.21896	0	Y	4,044,257475
488583		Hs.62716	0		4,011,389816
41869		Hs.107527	0		5,592,503276
768111		Hs.98314	1		3,239,435843
753417	AF035528	Hs.153863	0	Y	3,493,164497
34901		Hs.78006	0		10,460,38669
53122		Hs.12581	0		6,258,254267
796613		Hs.82985	0	Y	3,590,258706
108864		Hs.13456	0		4,068,561654
796643		Hs.5025	1		5,545,524386
346997	AB024518	Hs.58589	3		12,845,7118
1475633		Hs.118796	1		4,596,734096
627039		Hs.8850	1		6,492,747593
510576		Hs.91011	3	Y	88,507,63264
841621		Hs.100686	3	Y	10,406,02797
131452		Hs.202949	1		6,382,688841
450060	P08603	Hs.194272	1		4,893,533103
1323448		Hs.17409	1	Y	17,694,84734
742696		Hs.97774	0		3,292,30718
1456160		Hs.71	0	Y	11,435,95652
38347		Hs.106309	0		9,045,888928
262060	P28300	Hs.102267	0		17,183,311
785930		Hs.77637	0	Y	5,800,326638
418159		Hs.6139	0	Y	5,729,883626
701625	D83243	Hs.89385	0		1,884,646924
713213	AC004410	Hs.19399	0	Y	3,840,691384
713263	Q13519	Hs.89040	0	Y	4,390,385413
416374	AF120265	Hs.11663	5	Y	7,684,741966

Table 2

222157	Hs.21894	1	10.544097
191950	Hs.117815	0	3.077897094
49485	Hs.7133	0	2.189197539
489755	Hs.8850	1	5.370816808
184717	Hs.34333	0	3.085244527
184811	Hs.20526	0	8.089355613
824109	Hs.34871	0	8.606736997
324513	Hs.40098	3	10.79555324
435992	Hs.21126	0	5.561894022
325111	Hs.55950	0	4.506763844
825647	Hs.56966	0	3.292981642
855610	Hs.5307	1	3.378577727
269425	Hs.114362	0	11.29720467
685516	Hs.97101	0	3.434799977
700299	Hs.24143	2	3.321004228
646657	Hs.14511	0	6.489269439
362402	Hs.20707	0	2.863984787
277537	Hs.155244	1	3.125625548
741962	Hs.172844	0	3.483235526
1474174	Hs.111301	0	3.273209935
431215	Hs.117281	0	3.995716066
878605	Hs.29005	1	3.928281923
380883	Hs.130847	0	2.037281169
263341	Hs.26358	1	5.970121477
280999	Hs.46721	1	4.862996117
451557	Hs.18160	0	3.883879495
25664	Hs.78006	0	7.153225537
322192	Hs.24248	2	3.984475248
825270	Hs.109316	1	11.08330086
868770	Hs.32295	0	8.81922855
1468776	Hs.6372	0	4.212469806
454317	Hs.228711	0	19.06777101
167205	Hs.7833	0	13.35681636
266500	Hs.8236	1	6.200258143
1526789	Hs.2537	1	4.883265909

Table 2

725143	Hs.36563	0	Y	22.45284387
147826	Hs.171965	1		6.761307576
1558642	Hs.11365	1	Y	13.4400202
377887	Hs.64859	1	Y	5.137735823
855563	Hs.179941	0	Y	8.507104879
323599	Hs.1735	1	Y	9.082105677
606128	Hs.25252	0	Y	26.58192957
1636447	Hs.83381	0		13.93546317
645332	Hs.5025	0		3.682829503
814053	Hs.11638	1	Y	14.97263355
1031727	Hs.44017	0		4.152182514

Table 3

Image Clone ID	GenBank Accession Number	Cluster Number	Number of subtracted libraries (out of six) where clone was found	Secretion Predicted?	Known Secretion?	Expression Ratio (Cancer / Normal)
129865	D84212	Hs.189147	3			4.58841973
298444		Hs.18376	0	Y		2.979877903
269815	P08476	Hs.197458	0		Y	2.578710848
162211	P28288	Hs.75781	1			2.156072766
51632	Q15041	Hs.75249	3	Y		2.351793598
280750		Hs.24512	0	Y		2.335866208
782718	A27270	Hs.21922	2	Y		2.29869536
247635		Hs.92071	0	Y		3.571901076
324225	AF060228	Hs.17466	5			2.030503199
755145	P15311	Hs.155191	0			4.256878504
342378	Q16690	Hs.2128	0			2.298288485
135221	P25815	Hs.2982	2			2.415701989
363575	AB007191	Hs.78221	1			1.893332536
86220	P48775	Hs.183671	0	Y		3.388261876
813830	P08574	Hs.597	0			1.961173117
111006		Hs.168212	2	Y	Y	2.869302533
503617	Q07325	Hs.77387	0			6.765422277
342640	Q14012	Hs.81892	2			3.124513198
108255		Hs.13740	0			1.685838523
140301		Hs.28792	1	Y		3.422080524
126650		Hs.132959	0			2.260169693
795803		Hs.109706	1			3.319782733
80109	P01908	Hs.53875	1		Y	2.678218629
120881	Q13636	Hs.107325	1			2.214355336
52933	U41060	Hs.79136	5	Y		10.7372262
788654	P29354	Hs.6289	0			2.647856813
321708		Hs.6189	0	Y		5.55937843
363590		Hs.6111	0			2.191391292

Table 3

154654	Hs.3321	0	2.289303272
36971	Hs.203779	6	5.386675558
357373	Hs.77695	1	2.871391655
359119	Hs.83758	0	2.998125217
813410	Hs.150675	3	3.156388818
44975	Hs.76038	0	1.681326592
243741	Hs.44532	0	2.687838488
191978	Hs.155751	1	1.972086645
347373	Hs.184693	1	2.507530116
814306	Hs.2384	1	4.975588669
898286	Hs.184572	6	3.776178311
123255	Hs.4863	3	2.577132769
132068	Hs.103808	0	3.344683275
214068	Hs.169946	3	4.657576525
840878	Hs.195136	2	1.887291117
686172	Hs.77695	1	2.594660894
143887	Hs.154737	2	3.49512297
262920	Hs.174050	1	3.057606587
297439	Hs.14355	1	3.300520248
289337	Hs.140	6	11.19327269
196612	Hs.1695	0	2.28012055
139009	Hs.118162	1	3.358002441
137456	Hs.23352	2	2.183682248
210405	Hs.179774	0	2.114601452
292933	Hs.20830	0	2.60471972
838568	Hs.74849	3	4.076328566
814595	Hs.75871	3	3.051560082
788566	Hs.80296	0	2.262379088
139009	Hs.118162	1	3.31552676
769921	Hs.93002	0	3.497040804
122077	AF070626	1	2.522543333
813410	P53803	3	3.740585902
109316	P01011	0	2.812979324
28823	Hs.77770	1	1.686789426
726454	P33552	0	3.441566487

Table 3

43826	P21283	Hs.86905	1		2.824386302
51447	P08637	Hs.763	1	Y	2.327024534
120138		Hs.16940	0		2.92778143
49117	D86969	Hs.82292	0		2.213584335
897952	P28066	Hs.76913	0		1.996865234
111389		Hs.179808	0		4.902918015
416049		Hs.118338	0	Y	2.187321614
758293	P06576	Hs.14838	0		3.483004832
786894	L26246	Hs.1578	0		3.262883451
839904	P06576	Hs.14838	0		2.186017028
511632		Hs.110857	1		2.404866354
725321		Hs.198564	0		12.18443808
728658	U29856	Hs.81687	0		3.739393897
360240		Hs.155572	1		2.32039004
52021		Hs.30098	0	Y	3.698946562
86160	P01009	Hs.75621	0		2.162352094
882510	P52292	Hs.181043	2		3.96903419
438076	P48454	Hs.77204	2		4.43746778
417867	P17861	Hs.149923	5		2.531300769
417908		Hs.103238	0		2.056993039
741977	P00751	Hs.69771	4	Y	5.654540513
970813	X98294	Hs.81848	2		1.919967882
845363	P15531	Hs.118638	0		2.433804389
418150		Hs.59075	0		2.94420826
432581		Hs.184938	0		2.081012933
784212		Hs.10756	0	Y	2.585034716
430235	P06899	Hs.2178	5		2.35418091
781089	AF062649	Hs.159626	0	Y	3.237540056
773286	AF036241	Hs.184276	1		4.208520985
200556		Hs.21851	2		3.25888426
488431		Hs.21894	1	Y	2.672058597
725395	AF143807	Hs.169896	1		2.804295457
70500		Hs.23352	2		2.89574434
489373		Hs.25557	0	Y	2.878499806
283919		Hs.795	0		2.838143684

Table 3

109863	P54851	Hs.29191	0	Y	2.221454344
48862		Hs.15767	0		2.046701915
428412	P49863	Hs.3066	0		1.998412487
243882	U78305	Hs.100980	0	Y	2.554300385
586725	L42374	Hs.75199	0		3.268083191
204483		Hs.46677	1		2.490387516
433350		Hs.878	0		3.079518374
758347		Hs.178603	5	Y	2.202559306
343736	P51671	Hs.54460	2		2.944850517
461759	D89050	Hs.77729	0		3.159610698
280375		Hs.46677	1		3.189238122
283893		Hs.107968	0		1.709311194
48896		Hs.172551	0		1.708324766
593223	D87684	Hs.181368	3	Y	2.120123701
843075	Q02874	Hs.75258	4		2.013919541
307249		Hs.54946	0	Y	2.115212862
744944	U90236	Hs.22564	0		2.01819123
41822		Hs.26102	1	Y	2.925866678
866447	P13284	Hs.14823	1	Y	3.052523408
66599	P18440	Hs.155956	1		12.66753899
365531	P25763	Hs.146409	0		2.309779259
433253	P09467	Hs.574	1	Y	2.871445378
61700		Hs.5740	0	Y	2.416935104
34442		Hs.22920	0	Y	6.136331434
838829		Hs.143323	0		2.03060118
788205		Hs.83484	0	Y	2.208014236
1409509		Hs.73980	1	Y	14.26552538
290841	P06899	Hs.20418	5		1.96200992
951241		Hs.62273	3		4.810088059
593929		Hs.72865	0		4.352058455
1493160		Hs.2248	3		6.708798681
39453		Hs.101282	0		2.871524938
744367		Hs.112948	0	Y	2.704666188
785707	AF044588	Hs.5101	2		3.022715381
785795		Hs.15929	2		11.83417348

Table 3

754594	Hs.170057	0	Y	2.57992219
754628	Hs.25933	0	Y	2.725288748
625616	Hs.34744	1	Y	1.66632895
35010	AB005559	0	Y	23.50384687
378481	P10451	0	Y	3.088436155
594693	Hs.313	0		8.848577202
489109	Hs.55468	0		1.884627225
283142	Hs.103493	0	Y	3.57835403
35147	Hs.47234	0	Y	2.578672811
35484	Hs.23882	0	Y	3.412605613
593431	Hs.23892	0	Y	3.393622435
292399	Hs.23703	4	Y	2.422280854
1476055	Hs.50966	5		3.159591874
510576	Hs.81915	0	Y	21.89809113
841621	Hs.91011	3	Y	11.57726682
813730	Hs.10686	3	Y	3.778529601
812954	Hs.76550	0		14.25355823
296555	Hs.88253	1		2.518611541
460777	Hs.203411	0		3.441022585
29967	Hs.7647	1	Y	3.141727189
730554	Hs.30098	0	Y	2.177021191
272694	Hs.54960	1	Y	2.207614979
1455566	Hs.108636	0	Y	2.55457736
160532	Hs.258	0	Y	3.293344299
416374	Hs.176588	0	Y	17.91638953
491524	Hs.11683	5		2.750845961
506032	Hs.43946	2		3.959712932
206779	Hs.20716	3		1.793397977
231802	Hs.27902	0	Y	2.23238898
435890	Hs.109643	0	Y	2.181223694
278531	Hs.189299	0	Y	2.858033608
739123	Hs.82758	2		3.302651455
828273	Hs.23703	4	Y	3.227009973
250678	Hs.30484	0	Y	2.662081811
742074	Hs.24743	0	Y	2.212256687
	Hs.48320	0		

Table 3

397488		Hs.203492	2	Y	3.335976685
815556	P46783	Hs.6823	0		1.819754286
814528		Hs.75497	0		2.689636359
132326		Hs.63931	1		2.497767477
392630		Hs.120910	0	Y	16.48229102
121857	P14798	Hs.16244	0	Y	3.621254078
1472797		Hs.42824	0		2.055037746
1416086		Hs.79457	0		1.797002833
51773	AC005154	Hs.12770	1		3.4225676
1461528		Hs.125283	0	Y	2.711488039
1474424		Hs.69476	0		2.396575092
745283		Hs.112094	0		2.333712316
878698		Hs.7337	1	Y	2.106802529
266500		Hs.8236	1	Y	2.689094466
1457276		Hs.154737	2	Y	5.275868415
447173		Hs.222038	0		6.16306702
461933		Hs.193307	1		4.848743585
745097		Hs.116160	0		5.845300949
471568		Hs.109706	1		2.754245944
284261		Hs.181385	0		1.96295302
1420830		Hs.165464	0	Y	2.326905439
1602209		Hs.14285	0	Y	2.466205953
1501546		Hs.123066	0		2.218138258
1603583		Hs.14368	1		2.957854634
1805178		Hs.18272	1	Y	2.399028312
146882	O00762	Hs.93002	0		3.553945522
1468070		Hs.78221	0		2.020449132
1558642		Hs.11365	1	Y	3.847774744
1492468		Hs.125783	0	Y	2.541048484
1500000		Hs.180779	0		2.719650824
1610448		Hs.75722	1	Y	2.134880551
447715		Hs.93768	0		3.618195572
855563		Hs.179941	0	Y	3.173922613
814769		Hs.38178	1		3.023753485
1623328		Hs.21275	0	Y	2.350909479

Y

Table 3

506128	Hs.25252	0	Y	2.053469746
855723	Hs.172035	1		2.167714685
40063	Hs.106419	0		3.233732273
201125	Hs.165800	0		3.040435583
	P06899			

Table 4

Image Clone ID	GenBank Accession Number	Cluster Number	Number of subtracted libraries (out of six) where clone was found	Secretion Predicted?	Known Secretion?	Expression Ratio (Cancer / Normal)
668425	AF067730	Hs.317	0			1.931653639
298444		Hs.18376	0	Y		2.458128039
141768	P04626	Hs.173684	0	Y		5.279583708
38763	X82554	Hs.119007	0			2.158098743
259815	P08476	Hs.197458	0		Y	4.545171972
162211	P28288	Hs.76781	1			2.933924688
755037	P78552	Hs.67878	1	Y		2.648051188
210415	Q13009	Hs.82141	0			2.185004016
810986	U53588	Hs.82887	0			2.539401737
823696	P09914	Hs.20315	1			3.156320745
144834	X73882	Hs.146388	0			2.072101242
69317	P16403	Hs.7644	0			2.64275943
788511	L07597	Hs.149957	0			2.297549435
112806		Hs.106019	2			2.624635835
280750		Hs.24512	0	Y		2.168284974
782718	A27270	Hs.21922	2	Y		3.557161475
324225	AF060228	Hs.17466	5			2.819322938
487929		Hs.5159	0			2.731331022
85460	X95190	Hs.9795	0			5.238824094
342378	Q16690	Hs.2128	0			1.99544001
135221	P25815	Hs.2962	2			10.03600539
950445	P05323	Hs.91773	1			2.589533801
813830	P08574	Hs.897	0	Y		2.466487129
135083	P30101	Hs.110029	0	Y		2.670123565
293569		Hs.16769	0			3.480918546
415215	AF151803	Hs.5298	2			2.24985165
197776	AF083255	Hs.168904	2	Y		2.046826541
782217	U82535	Hs.227511	0	Y		2.079185344

Table 4

811740		Hs.1142	0	Y	3.078325805
783729	P04626	Hs.173664	0		2.847049482
825296	Q14746	Hs.82399	0	Y	2.468084057
208531		Hs.7994	0		2.15248541
714106		Hs.77274	1	Y	2.469003861
503617	Q07325	Hs.77367	0	Y	3.302859048
202919		Hs.102824	0		2.999514833
786675	Q14506	Hs.2719	0	Y	3.37634683
244147	P49241	Hs.821	3		2.334391842
140301		Hs.28792	1	Y	3.673598586
292515	S73498	Hs.21293	0	Y	2.637662849
365665		Hs.61311	0	Y	4.384953936
795803		Hs.109708	1		2.52000702
782766	AF155110	Hs.5624	1		2.326185746
810846		Hs.180428	1	Y	3.30808346
180520	Q05086	Hs.180686	1		2.16950514
123117		Hs.118778	1	Y	2.146478589
809944	O15027	Hs.5716	0		2.210333532
814615	P13995	Hs.154672	0		2.234285178
144786	P21810	Hs.821	3	Y	4.631407273
782513		Hs.21205	0		7.263701601
815542	P20591	Hs.76391	0		3.417087548
156386	M60922	Hs.184488	0		2.486331341
120881	Q13636	Hs.107325	1		5.104047245
509823		Hs.73848	1	Y	8.525090579
592359	AL031228	Hs.66776	0		2.073804283
126413	P19823	Hs.75285	0		2.101359062
52933	U41060	Hs.79136	5	Y	13.12449404
276449	P08236	Hs.198902	2	Y	2.807542184
898262	P22314	Hs.2055	0		2.824843113
773589	Q09028	Hs.16003	1		2.145204671
137387		Hs.18387	0		1.862056232
153779		Hs.183171	0		2.303623091
363590		Hs.6111	0		8.350341055
214133	P25440	Hs.75243	1		3.005033147

Table 4

175103	Hs.57652	0	Y	6.982550781
190887	Hs.82116	0	Y	1.843341892
763897	U84408	0	Y	2.468336343
840687	P26442	1	Y	10.5797577
29063	P15941	0	Y	3.302347788
164654	Hs.90797	0	Y	2.676846591
293901	Hs.3321	0		3.428789946
376516	Hs.3459	0		2.227898801
813279	Hs.62354	0		3.327215288
768562	Hs.78223	0	Y	2.347697318
813149	Hs.155968	0		5.648577581
135083	Hs.2178	5		3.624208427
586500	Hs.110029	0	Y	2.791041215
773215	Hs.114366	1	Y	2.78168735
898073	Hs.198191	0		2.055367929
814054	Hs.74368	0		4.338662544
130057	Hs.158282	0	Y	3.188880171
132140	Hs.23057	2	Y	5.351266089
814306	Hs.93861	0	Y	3.304517641
823590	Hs.2384	1	Y	3.526317072
949914	Hs.107573	1		2.152218484
240518	Hs.196458	0	Y	43.95009017
139835	Hs.1305	0		3.928932119
123255	Hs.28309	1		3.288809403
35191	Hs.4963	3	Y	1.91398535
143169	Hs.118884	0		4.02037986
309515	Hs.183576	0	Y	3.247969711
416280	Hs.1584	1		2.896880491
134270	Hs.24386	0		3.369767665
143846	Hs.163596	0	Y	4.08633132
214068	Hs.169946	0		6.707293591
898096	Hs.178574	3		2.194250491
950445	Q00007	0		2.770438042
795173	Hs.91773	1		1.996786658
565235	Hs.69743	0	Y	2.54061354
	Hs.89718	3		
	P52788			

Table 4

35191	D50645	Hs.118684	0	Y	2.014049291
840878	Q15392	Hs.195136	2	Y	5.378443037
773922	D13630	Hs.155291	5		2.392223712
382654	P16518	Hs.93164	0		1.979825777
143887	AF015287	Hs.154737	2	Y	11.00444823
470061	Y15258	Hs.20191	0		5.403817928
292770		Hs.172084	0		2.567598804
813818	AB007869	Hs.5168	2		2.077809891
724588	Q00978	Hs.1706	0		2.859696758
289337	P01859	Hs.140	6	Y	3.555963002
134783	P12107	Hs.82772	0		3.826185574
839101		Hs.74471	0	Y	4.657507884
611521	P27824	Hs.155560	5	Y	2.571803904
840818	AF043045	Hs.81008	1	Y	3.685268937
594743	L27841	Hs.75737	0	Y	2.423695279
345751		Hs.7910	0		2.185772984
511428	U28249	Hs.92323	0	Y	3.631918207
812251	P49137	Hs.75074	0		2.165629233
754046	Q14657	Hs.18212	0		3.581635884
877644	Q92733	Hs.9629	3		2.712152042
139009	P02751	Hs.118162	1	Y	4.37271796
814409	Q99943	Hs.209119	0	Y	2.046482952
247660	AB013094	Hs.14637	0		2.683662945
357120		Hs.84640	0	Y	2.430363992
139573		Hs.75875	3	Y	2.193723628
592243	P20061	Hs.2012	0		12.33698028
246549	P49721	Hs.1390	1		3.086654877
210405	D45248	Hs.179774	0		2.397002532
27104		Hs.76986	1		2.006967573
838568	P09689	Hs.74649	3		3.593330033
825442	U14603	Hs.82811	4		1.958507205
814378	U78085	Hs.31439	3	Y	4.91404943
814595	Q92503	Hs.75871	3		2.056313285
77805	P35606	Hs.75724	0		2.699703804
243546		Hs.106283	0		2.084152911

Table 4

41657	P05154	Hs.76353	5	Y	Y	2.854412912
251019		Hs.181312	2	Y	Y	2.705860077
471266		Hs.153910	0			1.959749964
139009	P02751	Hs.118162	1	Y	Y	4.468718779
752631		Hs.1420	0	Y	Y	2.035872238
769921	O00762	Hs.93002	0	Y	Y	2.12579115
771323		Hs.75093	0	Y	Y	2.016745359
823590	U14550	Hs.107573	1	Y	Y	3.053381858
765574	U53225	Hs.76283	0	Y	Y	2.39675518
789091	P28001	Hs.28777	0	Y	Y	3.99596805
292882	AB015344	Hs.227840	0	Y	Y	2.051134582
82876		Hs.170218	2	Y	Y	2.947660026
360245		Hs.24734	0	Y	Y	2.0214461
109316	P01011	Hs.107325	0	Y	Y	14.55222204
782308		Hs.7358	1	Y	Y	4.300410656
811582		Hs.162793	1	Y	Y	4.963004033
897497	U82759	Hs.127428	0	Y	Y	2.246993147
813673	L24521	Hs.89525	0	Y	Y	2.811809847
47647		Hs.74566	2			2.161734986
813841		Hs.179736	1	Y	Y	5.863760726
810612	P31949	Hs.150580	4			2.038460827
126320	P14923	Hs.2340	0	Y	Y	2.2644044
26817	Q13740	Hs.10247	1			2.894076466
843049	P33991	Hs.164443	0			2.330520993
549728	P17655	Hs.76288	4	Y	Y	2.342923667
511521	P27824	Hs.155560	5	Y	Y	3.224519898
782513		Hs.21205	0	Y	Y	4.794115892
840158	P19367	Hs.118625	0			1.986691035
138139	P05114	Hs.172207	1			1.963438505
212542		Hs.21851	2			2.900215817
810813	P29034	Hs.38991	1	Y	Y	3.994133788
810331	L42379	Hs.71816	5	Y	Y	4.215618126
843140		Hs.118778	1			2.21076935
120138		Hs.16940	0			4.124412091
49404	Q83075	Hs.195183	0			2.273755792

Table 4

950367		Hs.7957	3	3,011769838
49117	D86969	Hs.82292	0	1,988192273
840691	P42224	Hs.21486	0	2,722733308
783721	D86957	Hs.80712	1	2,585403277
815781	Q92598	Hs.36927	1	3,556635949
66815		Hs.152925	0	2,286196249
111389		Hs.479808	0	2,443847304
240637		Hs.40094	0	2,500633633
782537		Hs.8154	0	5,841888866
144862	AF151867	Hs.108805	0	2,411063926
322223		Hs.108502	0	1,855749714
418049		Hs.118338	0	2,400507322
428704		Hs.27131	0	1,922403099
758293	P06576	Hs.14838	0	1,912489138
511632		Hs.110857	1	2,414493212
613251		Hs.112318	4	2,018634425
782450		Hs.30819	0	1,980426271
322451		Hs.35198	0	5,65406872
810142		Hs.77961	0	3,051877619
173581	Q13177	Hs.30692	1	2,60312898
845453	P38405	Hs.182215	2	2,005074102
757222		Hs.59889	1	1,721938303
725321		Hs.198564	0	20,51400812
726658	U29656	Hs.81687	0	6,327877795
52021		Hs.30098	0	3,580123322
41898	Y12711	Hs.80061	1	2,37398429
124239		Hs.215725	0	2,374365025
853908		Hs.181244	0	3,265905408
435076	P49454	Hs.77204	2	2,252763583
785198	AF161829	Hs.7854	5	2,5961353
839746		Hs.8859	0	2,836503669
505579		Hs.108981	0	2,630505055
417867	P17861	Hs.149923	5	5,666462355
741977	P00751	Hs.69771	4	15,3735302
71863		Hs.5944	0	1,592147209

Table 4

50383	Hs.23740	0			2.731387546
357278	Hs.47343	4	Y		2.63700768
277187	Hs.7341	0			3.123726222
795729	Hs.76366	0			2.208501657
784212	Hs.10756	0	Y		1.843263742
50905	Hs.184786	1			2.470435755
46584	Hs.90363	0	Y		2.170943501
503682	Hs.16603	0	Y		2.902885328
782547	Hs.25338	2		Y	4.112765455
810446	Hs.109631	0			3.493699338
431908	Hs.81469	0			1.835702561
249603	Hs.189263	0			2.782836524
773286	Hs.184276	1			10.75818524
213651	Hs.104925	0			2.292095652
25194	Hs.25318	1			3.964191053
795909	Hs.21701	0	Y		2.810769019
811581	Hs.21835	0			2.81149243
200656	Hs.21851	2			3.728834282
415229	Hs.37331	0	Y		2.242529252
809357	Hs.21970	0	Y		3.27089901
32083	Hs.22191	2			2.663404238
950768	Hs.86347	1			2.177358547
70500	Hs.23352	2			1.980684665
504308	Hs.14559	0			1.955985569
503889	Hs.184591	1			2.021065521
810429	Hs.25664	1			2.199354123
271989	Hs.102398	0			2.224289866
430465	Hs.60002	0	Y		2.292985058
811024	Hs.118110	0	Y		2.981588275
366100	Hs.19398	0			2.10573765
346321	Hs.182471	0			8.811065257
283919	Hs.795	0			3.361872464
22895	Hs.89584	0	Y		2.312193902
68049	Hs.103391	0	Y	Y	2.684823583
503602	Hs.107767	0			2.34408615

Table 4

298417	Q07654	Hs.82961	1	Y	Y	3.616914726
109863	P54851	Hs.29191	0	Y	Y	3.423526643
261219		Hs.108812	0	Y	Y	2.200811613
268178	P27824	Hs.43579	5	Y	Y	2.548477674
271662	M80629	Hs.155266	0	Y	Y	2.503576782
433350		Hs.878	0			3.822841186
768347		Hs.178603	5	Y	Y	4.393911285
884673	X57398	Hs.214198	1	Y	Y	2.188458246
511634		Hs.4783	0	Y	Y	2.358372104
41391		Hs.26040	0	Y	Y	3.884443001
366663		Hs.48353	0	Y	Y	3.946919362
259374	AL079298	Hs.187531	2			3.402288343
742132	P05161	Hs.833	1	Y	Y	2.680337813
452374	P19652	Hs.572	0	Y	Y	3.207656278
429434		Hs.184532	0	Y	Y	3.149946922
588915	P04844	Hs.2867	3			2.772266002
365041		Hs.194688	1			2.034548152
755578	AC003007	Hs.184601	1	Y	Y	2.205884885
810089		Hs.67776	0	Y	Y	2.125370381
415145		Hs.196726	0	Y	Y	2.365137592
741881	Z97184	Hs.170160	0	Y	Y	2.022114598
561916		Hs.6763	0			2.684104002
843075	Q02874	Hs.75258	4	Y	Y	3.626118629
250699		Hs.182885	1			2.125586131
78041	P40189	Hs.71968	2			2.535033368
796876		Hs.9825	2			2.145889943
305253		Hs.17757	0	Y	Y	2.138790159
810326		Hs.17767	0			2.445665749
366481		Hs.91539	0			2.616387165
590544	P45984	Hs.8325	0			2.098583601
271568	P32391	Hs.5321	2			2.169504671
266312		Hs.84999	0	Y	Y	2.796822903
280897		Hs.108884	0			2.280277066
40364		Hs.26244	0	Y	Y	4.155484026
144849	L54057	Hs.29748	2			2.402294448

Table 4

502669	Q92769	Hs.3352	2		2.23738434
143450		Hs.107205	0	Y	1.916128851
489684	P53999	Hs.74881	2		2.313508447
50114		Hs.167399	1	Y	2.641193675
52339	AF053455	Hs.8037	1		2.844128616
745402	P48729	Hs.144477	2		2.092157788
85060		Hs.8185	0		2.141595867
840783		Hs.103657	1	Y	2.403704224
814363		Hs.95	0		2.517955058
129387	U77494	Hs.119687	0	Y	2.484062316
66589	P18440	Hs.155956	1		46.7751543
262804		Hs.5796	2		2.170955022
46091		Hs.22587	2		2.077872555
33611		Hs.22604	0	Y	2.323626875
1049033		Hs.86368	0	Y	3.039983333
491405		Hs.5807	2		3.613414082
504461	AF140242	Hs.107318	0	Y	1.910995092
857661	Q13435	Hs.75916	1		2.316840335
432564	Q15427	Hs.25797	0		3.170442615
290091		Hs.78518	0		3.017470958
842825	P15170	Hs.2707	0		2.735955693
433253	P09467	Hs.574	1	Y	4.090131217
34442		Hs.22920	0	Y	6.778384568
83358		Hs.76704	1	Y	2.77735776
798765		Hs.7727	0	Y	2.334851139
838829		Hs.143323	0		2.803697826
22759		Hs.110454	0		2.632583855
897761	AB010882	Hs.9456	1		2.00452416
842767		Hs.21331	1	Y	2.383114508
511459	P30101	Hs.110029	0	Y	3.220922364
504959		Hs.32405	0	Y	8.685362464
610883		Hs.167399	1	Y	2.380283209
993164	P51669	Hs.32690	0		2.288627283
253241		Hs.108646	0	Y	2.33588243
341774		Hs.181244	0	Y	2.21186021

Table 4

785840	Hs.19822	1		2.350305394
823656	Hs.43668	0		2.186855656
666451	Hs.6763	0	Y	4.616335533
1180818	Hs.227511	0	Y	2.453855865
1180723	Hs.100623	0	Y	1.985016044
669359	Hs.23729	0		2.348168711
782406	Hs.90011	1		2.137896697
840698	Hs.15356	0	Y	2.287820482
262834	Hs.42768	0	Y	2.462533751
731240	Hs.6763	1		4.700023173
796266	Hs.22260	1		4.019876423
951241	Hs.62273	3		2.217559315
418318	Hs.103239	0		3.700869208
593929	Hs.72865	0		2.029414206
1493160	Hs.2248	3		2.325808809
785693	Hs.99214	0		3.343444976
44387	Hs.30504	0		5.676121289
785701	Hs.107325	1		3.677555827
785703	Hs.136253	0		3.517869381
89453	Hs.101282	0	Y	5.624864993
89577	Hs.24990	0		2.262688591
857985	Hs.59548	0	Y	2.585751049
769926	Hs.93669	2	Y	2.378977841
279720	Hs.125201	0		3.189629641
744367	Hs.112949	0		6.055094403
858450	Hs.99947	0	Y	3.201202362
34526	Hs.107318	0	Y	2.495953602
568466	Hs.69235	0	Y	1.956200842
812967	Hs.20709	1		2.527104172
1032056	Hs.112806	0	Y	1.943113368
785707	Hs.5101	2		2.480623506
785795	Hs.15828	2		2.661129512
754594	Hs.170057	0	Y	2.984016971
626618	Hs.34744	1	Y	3.185334026
344505	AB005659	0	Y	2.627144912
	Hs.58314			
	P30520			
	Q13636			
	P13667			
	L10333			
	AF140242			
	AF053455			
	AF044588			

Table 4

757435	Hs.55999	0	5.56881387
743589	Hs.112712	0	2.18831793
593520	Hs.71475	1	2.1503717
731198	Hs.71577	0	2.804189281
785571	Hs.13015	1	2.14547727
726846	Hs.104702	1	2.162566956
898227	Hs.174203	1	5.713333876
726858	Hs.97330	0	1.918106752
898229	Hs.9589	0	2.201755109
292531	Hs.109366	0	2.580124145
510576	Hs.91011	3	36.7610458
126455	Hs.77690	0	2.285247047
841621	Hs.100866	3	11.22005262
1048599	Hs.112606	0	2.705540304
364324	Hs.78524	0	2.360222764
357236	Hs.78853	0	2.591058853
813730	Hs.76550	0	3.322357712
448386	Hs.171880	0	2.274035865
1323448	Hs.17409	1	2.632601271
1323591	Hs.76353	5	5.750453353
841140	Hs.183212	2	2.489180512
838689	Hs.179902	0	3.28315972
731290	Hs.191598	2	2.209733335
742596	Hs.97774	0	2.850205218
253246	Hs.41228	0	2.410730207
253314	Hs.141376	0	2.655162767
773335	Hs.81234	0	2.72439205
1458160	Hs.71	0	3.131883412
29987	Hs.30098	0	2.280828527
725746	Hs.142258	0	1.601834384
950778	Hs.20555	0	1.934404037
772416	Hs.26110	0	2.143794124
488301	Hs.28142	1	2.24736993
194723	Hs.113919	0	1.834404697
236689	Hs.108502	0	2.058381722
	P14866		Y
	AB015344		Y
	P51148		Y
	P52788		Y
	P40763		Y

Table 4

201931	Hs.114005	0	Y	2.197783747
272694	Hs.108636	0	Y	3.44658892
50475	Hs.78719	0		2.734738559
773138	Hs.107767	0	Y	2.178494559
342685	Hs.170226	0		2.51746496
320794	Hs.111742	0		2.598585299
813187	Hs.75866	1	Y	2.122885292
769542	Hs.75665	0		2.060538506
454459	Hs.12460	0		1.97868914
30221	Hs.21560	0		2.119413234
491327	Hs.111334	1	Y	2.056720597
470092	Hs.25220	1	Y	3.074863596
205497	Hs.12646	0		3.350500857
160632	Hs.176588	0	Y	4.615169299
416374	Hs.11663	5	Y	7.325151893
814232	Hs.5811	1	Y	2.153942484
133341	Hs.28980	3	Y	2.957995893
178805	Hs.135056	1		2.772374961
206370	Hs.174051	0		2.122315201
206779	Hs.27902	0	Y	2.766177189
714437	Hs.9598	0		2.817896489
725405	Hs.4105	0		2.350205777
725364	Hs.183986	0	Y	3.621788593
416478	Hs.14977	0	Y	1.515455525
703732	Hs.15611	0		1.859357831
814340	Hs.99745	0		2.246092139
814427	Hs.99739	0		2.197876049
382451	Hs.18341	0		2.255613448
451707	Hs.19978	0	Y	2.904074201
267666	Hs.22891	0		3.64680568
770346	Hs.182885	1		2.215706287
770766	Hs.3804	1	Y	2.547381633
815784	Hs.3184	1	Y	2.699344742
190892	Hs.169531	2		3.462885465
278531	Hs.82758	2		2.773131654
	P07237			
	AJ007583			
	AF120265			
	P08621			
	AF151830			
	AF131760			
	P80303			
	P09669			

Table 4

703916	AF082283	Hs.193516	0	2.417522719
825697		Hs.10590	0	3.909102421
745495		Hs.14570	0	1.988080662
150003		Hs.29724	0	2.709889101
811101		Hs.28242	0	1.933323946
294578		Hs.75621	0	47.59769092
191107		Hs.79532	0	1.985030467
428184		Hs.30029	0	2.742779543
828194		Hs.118739	1	3.112766609
155805	P29728	Hs.172285	1	4.306040697
269300		Hs.75866	1	2.571835534
220069		Hs.30029	0	2.612027762
344073		Hs.12921	1	2.717270252
739450		Hs.110379	0	4.428400301
279963		Hs.48026	0	3.091604311
827171		Hs.23296	1	1.955033681
878231	AF129756	Hs.6544	0	2.424470787
136508	P29728	Hs.172285	1	4.928953852
152289		Hs.106106	0	8.562758268
270558		Hs.28555	1	4.864655006
824995		Hs.184430	0	2.538842133
49249		Hs.82171	1	2.115778208
815563		Hs.1098	2	2.547708743
815740		Hs.88428	0	3.029128471
878550		Hs.7579	0	2.53364466
815800		Hs.77823	0	1.896634567
302955		Hs.76698	0	2.758995512
825223		Hs.13775	0	2.250509711
192401		Hs.124979	0	4.712373478
130103		Hs.23193	0	2.003828407
471835		Hs.61790	0	2.064442855
392366		Hs.193535	1	2.28627603
381036		Hs.227459	0	2.168084727
381058		Hs.59821	0	2.070739935
381062		Hs.59773	0	3.434321565

Table 4

190281	Hs.117694	0	Y	1.920065227
392399	Hs.137832	0	Y	2.280622031
262542	Hs.127310	0	Y	2.58430259
814988	Hs.87432	0		2.022597387
825815	Hs.70258	0		2.91853311
460002	Hs.55968	0		10.27763826
590145	Hs.17687	0	Y	2.171841103
825654	Hs.86693	0		1.78820863
701256	Hs.30514	0		7.212875144
825715	Hs.226251	0		2.784189011
460164	Hs.15978	0		2.558354952
825719	Hs.165404	0		3.071031432
624785	Hs.18259	0		2.099235141
625736	Hs.192552	0		3.968694292
701371	Hs.21739	0		2.165728392
131099	Hs.23490	0		2.071233978
131308	Hs.23445	0	Y	2.164902736
175533	Hs.32501	0	Y	3.043012253
360724	Hs.60684	0	Y	2.92827111
132326	Hs.63931	1		2.505378218
360732	Hs.40905	0	Y	2.052946552
175767	Hs.92860	0	Y	1.8262149
360743	Hs.25728	1	Y	3.85232572
824329	Hs.105189	0		2.286962822
26185	Hs.8325	0		2.281244621
487489	Hs.24758	0		3.287489894
824354	Hs.102548	0		1.984985885
32134	Hs.44131	0		2.824422007
490789	Hs.7393	0	Y	3.417584826
32621	Hs.168487	0		2.753971191
824376	Hs.180703	0	Y	5.219315985
129032	Hs.76353	5	Y	5.141479659
190305	Hs.26815	0		3.087022453
392630	Hs.120910	0	Y	15.10707391
190321	Hs.181781	0	Y	2.306773827
	L22343			
	AJ010842			
	P45984			
	U17032			
	P05154			
	O14510			

Table 4

190325	Hs.32539	0	Y	2.167218335
392647	Hs.43307	0	Y	9.747070124
288999	Hs.22065	0	Y	2.183023853
265103	Hs.23765	1		1.974715689
288959	Hs.26339	0		2.73247753
858152	Hs.179516	0	Y	2.129567627
825742	AF151867	0	Y	5.205034548
825822	P43005	0	Y	3.173116318
825857	Hs.11923	0	Y	7.233720619
828072	Hs.22301	0	Y	2.872432682
701690	Hs.41267	0		1.928000998
461609	Hs.79516	2		2.59378817
859832	Hs.88269	0		4.053709946
828109	Hs.6650	0	Y	13.31238619
489539	Hs.41371	0		2.073794505
700500	Hs.27763	0		2.117819878
745174	Hs.183302	2		2.260469148
745192	Hs.227622	1	Y	2.194858016
26519	Hs.106227	0	Y	2.004985519
452566	Hs.82689	0	Y	2.038013743
122321	Hs.13201	1	Y	3.059276558
24392	Hs.81800	0		1.776820509
1473146	Hs.100350	4		2.685228381
1630942	Hs.3454	0		1.956656655
1558108	Hs.26089	0		2.281538129
165838	Hs.54470	0	Y	2.751873634
50764	Hs.107014	0		2.975457548
788273	Hs.101174	0		2.13778556
436455	Hs.6000	0		3.051828847
51773	Hs.186810	0		3.859298534
1461528	Hs.12770	1	Y	2.250173863
701115	Hs.125283	0		2.659932503
461692	Hs.105088	0		8.823942045
878461	Hs.2178	5		1.880255718
32864	Hs.3239	0		2.909349846
	Hs.8852	0		

Table 4

531031	Hs.184788	1			2.548079636
1473795	Hs.16206	1	Y		2.485391843
1631634	Hs.84009	0			2.119043227
1456701	Hs.122607	0			3.698739854
1632141	Hs.25999	0			1.903752662
759181	Hs.167347	0			2.101577716
759184	Hs.6845	0			2.649371499
1573108	Hs.20644	0			2.308050376
49796	Hs.21948	0			8.13221261
1291971	Hs.49303	0			2.275535006
454317	Hs.228711	0		Y	2.618800731
745283	Hs.112094	0			4.273288431
486541	Hs.70565	0			1.81314234
489533	Hs.5825	1	Y		2.693681244
743699	Hs.116328	0	Y		2.457307548
33821	Hs.21929	0	Y		2.935189718
884430	Hs.179902	0	Y		2.368315564
562318	Hs.48928	0	Y		2.483905988
266500	Hs.8236	1	Y		4.347087428
1110298	Hs.82171	1			2.841556723
1614222	Hs.22981	0			1.852854413
1457276	Hs.154737	2	Y		3.291855308
1580874	Hs.44396	0			2.951386876
868188	Hs.192156	0	Y		2.211170355
854122	Hs.5432	0	Y		2.577960446
39766	Hs.26125	1			1.877763202
451933	Hs.193307	1			2.715826342
867606	Hs.180952	1			2.107176398
1555427	Hs.65119	5	Y		4.027275642
435750	Hs.15921	0			2.695599136
1420830	Hs.165464	0	Y		3.675556987
1635384	Hs.153951	0	Y		2.53343477
490813	Hs.100555	1			2.625350357
1584287	Hs.150275	0			2.323464669
491465	Hs.16390	0			2.532324381

P25311

Table 4

970880	P07226	Hs.102824	0	1.829884946
856567	P34932	Hs.90093	0	3.50884823
26736		Hs.16936	0	2.845546764
590310		Hs.29383	0	2.19726341
462237		Hs.30085	1	2.642214857
1048746		Hs.25320	0	2.454882598
239568		Hs.3346	0	2.67428504
753428		Hs.99769	0	3.278301488
235179		Hs.178011	0	2.055239174
40075		Hs.16085	0	2.420707805
743724		Hs.69388	0	1.9748694
1603583		Hs.14368	1	3.781798798
1605178		Hs.18272	1	2.416647157
1607018		Hs.26136	0	1.895640648
502198		Hs.12112	0	2.737257512
1593261		Hs.151536	0	2.421305481
744907		Hs.79672	1	2.395787561
502739		Hs.27842	0	1.997028417
502774		Hs.27337	1	1.877309495
854831	AB023152	Hs.128685	1	7.044854893
84371		Hs.12183	0	2.019793329
858183		Hs.11056	0	2.068057812
859418		Hs.24713	0	2.072859016
855236		Hs.105872	0	2.296191991
460039		Hs.117366	0	3.051432775
878713		Hs.26287	1	2.567650445
146882	O00762	Hs.93002	0	2.245666029
147826		Hs.171965	1	2.288002695
1555584		Hs.22208	0	2.030950788
1468070		Hs.78221	0	2.355673529
1558642		Hs.11385	1	15.85417742
1604703		Hs.110309	0	2.964973372
1610408		Hs.173878	1	2.269889506
22722		Hs.12245	1	2.314283608
41295	P49903	Hs.124027	0	3.112257268

Table 4

23443	Hs.12365	0	Y	2.658709461
41207	Hs.16206	1	Y	2.429685175
377987	Hs.64859	1	Y	4.78288635
854593	Hs.5716	0	Y	2.53301708
854833	Hs.116773	0	Y	2.536516484
1610453	Hs.44049	0	Y	1.994271004
1613222	Hs.103329	0	Y	2.461008312
1605407	Hs.136644	2		1.951748637
1608657	Hs.8302	0		3.274658537
1606780	Hs.119637	0		2.11937208
1492468	Hs.125783	0	Y	10.33867189
1500000	Hs.180779	0		2.789803753
1610448	Hs.75722	1	Y	3.135598673
856854	Hs.227940	0		2.220175084
878617	Hs.4750	0	Y	3.414044848
855563	Hs.179941	0	Y	5.279886901
591439	Hs.11816	1		2.017983103
149539	Hs.20281	0		2.216465995
814769	Hs.38178	1		2.39809094
80715	Hs.172684	0		2.64985278
745556	Hs.97684	0		5.442207735
471834	Hs.16537	1		2.188845948
24181	Hs.6224	0		1.957638791
1492268	Hs.8164	0		1.948822542
1292121	Hs.120858	0		2.594691335
606128	Hs.25262	0	Y	5.082636831
1631863	Hs.73933	0	Y	2.151659312
23318	Hs.78305	0		1.964101807
855723	Hs.172035	1		5.821566588
40063	Hs.108419	0		3.344391899
195652	Hs.11042	1		1.907663084
165227	Hs.12084	0	Y	2.604057108
486710	Hs.107318	0		2.003300579
989593	Hs.116922	0		1.920286624
461336	Hs.110379	0	Y	6.101511857

Table 4

49482		Hs.114404	0	Y	2.210350126
28368	P30101	Hs.110029	0	Y	2.705500204
347282	Q13330	Hs.58598	2		1.99085508
449275			0		2.105123503
25389	P11166	Hs.169902	1	Y	2.232801374
1526826		Hs.2733	3	Y	2.131133975
1637313		Hs.154978	0		2.024591667
1538215		Hs.6079	0	Y	2.167897217
878152		Hs.31819	0	Y	2.471351879
399483		Hs.5415	0		2.465568759
26406	P54886	Hs.114366	0	Y	3.600875992
32407	P15735	Hs.195177	0	Y	2.307453184
201282		Hs.25264	0	Y	2.912566176
487932		Hs.118739	0	Y	3.788319106

Table 5

Image Clone ID	GenBank Accession Number	Cluster Number	Number of subtracted libraries (out of six) where clone was found	Secretion Predicted?	Known Secretion?	Expression Ratio (Cancer / Normal)
129865	D84212	Hs.199147	3			2.427801567
123730	Y11215	Hs.19126	0			2.025859631
79629	P30991	Hs.89414	0			3.0654566
828173	P07737	Hs.75721	2			2.254955394
842906		Hs.220502	3			2.485657239
191664		Hs.108623	1	Y	Y	2.254109702
296444		Hs.18376	0	Y		2.329981397
144878		Hs.99816	0			2.2813714
141768	P04626	Hs.173664	0	Y		17.43821083
269815	P08476	Hs.197458	0		Y	7.196200569
162211	P28288	Hs.76781	1			2.321340228
327676	P19012	Hs.74070	2			3.283821544
788511	L07597	Hs.149957	0			2.216727585
112908		Hs.106019	2			2.551356737
280750		Hs.24512	0	Y		3.165698947
782718	A27270	Hs.21922	2	Y		2.973040182
324225	AF060228	Hs.17466	5			2.823058005
85450	X95190	Hs.9795	0			8.263325493
362853	U02680	Hs.82643	0			2.237531231
135221	P25816	Hs.2962	2			9.706589076
184175	P24390	Hs.78040	0	Y		2.377505177
785575	P38484	Hs.177559	1			2.215481739
950445	P05323	Hs.91773	1			2.41230346
293569		Hs.16769	0			2.674878439
149742		Hs.173203	0	Y		2.115057802
770859		Hs.149846	2	Y		2.123339709

Table 5

823851	AF053944	Hs.118397	0			2.585850878
788285		Hs.76252	0			3.273655548
783729	P04626	Hs.173664	0			8.820457665
825296	Q14746	Hs.82399	0	Y		2.115663007
123614		Hs.19002	0			2.029006184
714106		Hs.77274	1	Y	Y	5.142918092
503617	Q07325	Hs.77367	0	Y	Y	5.174834809
202919		Hs.102824	0			2.183261587
840158	P19357	Hs.118625	0			2.269558256
244147	P49241	Hs.821	3			4.328724892
140301		Hs.26792	1	Y		9.319294923
265694			0	Y		3.38742836
795803		Hs.109706	1			3.524146834
782768	AF155110	Hs.5624	1			2.505042663
180520	Q05086	Hs.180686	1			2.029862646
809944	O15027	Hs.5716	0			2.228780739
292996	Q04917	Hs.76544	0			2.677955848
204299	P35244	Hs.1608	1			1.903217029
841641	P24385	Hs.82932	0	Y		1.875255721
701751	L12579	Hs.147049	0			2.510985726
144786	P21810	Hs.821	3		Y	8.672283043
782513		Hs.21205	0	Y		3.300128419
120881	Q13636	Hs.107325	1			11.28086516
52933	U41060	Hs.79136	5	Y		7.237847476
276449	P08236	Hs.198902	2	Y		2.028745155
898262	P22314	Hs.2055	0			2.603222403
66594	AF063606	Hs.11000	0			2.391948818
321706		Hs.6189	0	Y		2.36504105
141314		Hs.113029	0			2.014940448
322723		Hs.93231	0	Y		2.463938198
363590		Hs.6111	0			4.772362616
823691	L49506	Hs.79069	0			2.074299481
22918	U86602	Hs.74407	1			2.146418589
214133	P25440	Hs.75243	1			2.421687088
150314	AF035293	Hs.12540	0			2.497015884

Table 5

175103		Hs.57652	0	Y	4.581620102
364329		Hs.23598	0		2.528038855
81129		Hs.146550	1	Y	2.395299249
782497		Hs.6349	0		2.17451996
840687	P15941	Hs.89603	1	Y	6.636966636
839991		Hs.179573	2	Y	2.500812699
154654		Hs.3321	0		2.637109328
293901		Hs.3459	0		2.318189784
365971	P11388	Hs.203779	6		3.237086105
359119	P33552	Hs.83758	0		2.027642653
809627		Hs.155017	1		2.093409846
376516		Hs.62354	0		2.656365873
813279	P13798	Hs.78223	0		2.450777507
768562	D76444	Hs.155968	0	Y	2.188753814
813149		Hs.2178	5		2.955485861
243741	Y12653	Hs.44532	0	Y	2.503444839
823859	P29033	Hs.81795	0		4.146147805
135083	P30101	Hs.110029	0	Y	2.337908937
843159		Hs.21704	1		2.165319235
588500	P54886	Hs.114366	1	Y	2.575605867
773215		Hs.198191	0		2.654906717
841370	P00505	Hs.170197	0		2.549461209
814054		Hs.158282	0		2.717681152
130057		Hs.23057	2	Y	3.705692438
132140		Hs.93961	0	Y	2.33461862
340630	P41279	Hs.248	0	Y	2.025753154
840942	P04232	Hs.814	0	Y	2.974661416
814306		Hs.2384	1		3.706195035
823590	U14550	Hs.107573	1	Y	2.685700585
949914	P07814	Hs.196458	0		2.262764708
897594	L37368	Hs.75104	1		1.909456672
24884	Q12860	Hs.143434	0	Y	2.382206005
898286	P08493	Hs.184572	6		2.205416845
470216	U90236	Hs.22564	0		2.523139252
123255	P15923	Hs.4963	3		3.920050882

Table 5

35191	D50645	Hs.118684	0	Y	2.022172721
143169		Hs.183576	0		3.330070393
309515	P49747	Hs.1584	1	Y	6.846356338
134270		Hs.24385	0		3.477469816
288896	U33632	Hs.79351	1		2.274248387
214068	P23771	Hs.169946	3		5.984613565
754358	X73608	Hs.8122	0		3.580033255
950445	P05323	Hs.91773	1		2.625567386
565235	P52788	Hs.89718	3		2.39591195
35191	D50645	Hs.118684	0	Y	2.088431842
840878	Q15392	Hs.195136	2	Y	5.607561696
504774	P36269	Hs.1675	0		1.927828387
814319		Hs.157178	0		2.284760228
840384	Q12849	Hs.79295	2	Y	2.741765265
143887	AF015287	Hs.154737	2	Y	5.265351731
470061	Y15268	Hs.20191	0		4.203536913
299197	U95740	Hs.6349	0		4.149850287
282980		Hs.42640	0		2.018706572
526282	P41240	Hs.77793	0		2.097289516
724588	Q00978	Hs.1706	0		2.037263792
289337	P01859	Hs.140	6	Y	6.684772505
810725	D89052	Hs.7476	0		2.053413788
898035	P07858	Hs.148493	0		2.288317858
134783	P12107	Hs.82772	0		19.0369397
839101		Hs.74471	0	Y	5.677694184
143523	P20908	Hs.148428	4		2.244427601
841059	P40121	Hs.82422	0		2.876383062
840818	AF043045	Hs.81008	1	Y	3.481033996
194986		Hs.16939	5		2.452146787
345751		Hs.7910	0		2.171906409
812251	P49137	Hs.75074	0		2.09473983
243549	P10242	Hs.1334	1	Y	3.039057479
877644	Q92733	Hs.9629	3		2.651521841
742125	L21186	Hs.65436	0		2.828710347
139009	P02751	Hs.118162	1	Y	14.32530447

Table 5

358468	AF151881	Hs.96334	1	4.409376309
787857	Q13190	Hs.154546	0	2.107276009
122159	P02461	Hs.119571	0	2.626998082
137456		Hs.23352	2	1.998722997
771220	Q04206	Hs.75569	0	2.259525621
246549	P49721	Hs.1390	1	3.483192179
27104		Hs.76986	1	2.452394269
810124	Q15102	Hs.8793	0	2.089545188
742143	P06127	Hs.58685	0	2.384326866
138991		Hs.80988	2	2.601688854
363058	P51793	Hs.199250	0	3.475461842
838568	P09669	Hs.74649	3	4.680879055
897910	D13665	Hs.136348	4	7.786768616
897781	P05787	Hs.73742	1	2.524102086
814378	U78095	Hs.31439	3	2.916004888
814595	Q82503	Hs.75871	3	2.769941812
77805	P35606	Hs.75724	0	2.160461219
824426	Q13442	Hs.8653	1	1.924632039
120015	U18297	Hs.35140	0	2.197386156
139009	P02751	Hs.118162	1	14.05447168
547247	P52823	Hs.197382	1	2.679712095
769921	O00762	Hs.93002	0	2.915203239
767851	P35555	Hs.750	2	2.423023857
324210	U75283	Hs.24447	0	2.481691223
897822	P43405	Hs.74101	0	2.580637691
711918		Hs.79033	0	1.797649979
122077	AF070626	Hs.93832	1	1.910710364
877613	Q14203	Hs.74617	2	2.102512183
789091	P28001	Hs.28777	0	3.929145419
292882	AB015344	Hs.227940	0	2.248206996
789147	P09104	Hs.196837	2	2.694636342
82976		Hs.170218	2	3.153749329
109316	P01011	Hs.107325	0	3.026816153
811582		Hs.182793	1	2.886560216
130835		Hs.96125	1	2.716301801

Table 5

897497	U82759	Hs.127428	0		4.480521137
813673	L24521	Hs.89525	0	Y	3.547496638
810017	Q03405	Hs.179657	0		2.148687971
30885	D63879	Hs.116875	1	Y	2.318074854
47647		Hs.74566	2		3.123872033
813841		Hs.173736	1	Y	3.162316341
810812	P31949	Hs.150580	4		1.872739861
126320	P14923	Hs.2340	0		3.219193983
897531	P02751	Hs.82914	0	Y	4.7419311
725454	P33552	Hs.83758	0		2.733638213
26617	Q13740	Hs.10247	1	Y	3.613437384
843049	P33991	Hs.154443	0		3.13011803
549728	P17655	Hs.76288	4		2.179101678
48285		Hs.74427	0		2.338755332
511521	P27824	Hs.155560	5	Y	2.337055315
589751	AF039103	Hs.90753	0		1.944791413
785816	U10324	Hs.195568	0		2.203043992
840158	P19367	Hs.118625	0		2.275624018
251685	P55287	Hs.75929	3		3.246335514
713145	P16070	Hs.169510	1	Y	2.580486598
823851	AF053944	Hs.118397	0		2.504882906
138139	P05114	Hs.172207	1		2.314394117
234617		Hs.24908	1		2.486763494
212542		Hs.21851	2		2.801015946
491113	P55287	Hs.75929	3		2.277606061
153025	P15018	Hs.2250	0		2.29268235
51447	P08637	Hs.763	1	Y	2.747348104
809598	P01919	Hs.73932	0		1.879722196
810331	L42379	Hs.71816	5	Y	2.621926511
42558	P50440	Hs.75335	0		1.869338646
120138		Hs.16940	0		3.809206941
49404	Q93075	Hs.195183	0		2.655563626
950367		Hs.7857	3		2.633060694
49117	D86969	Hs.82292	0		2.798751607
840691	P42224	Hs.21486	0		2.413260809

Table 5

417867	P17861	Hs.149923	5		3.911734751
741877	P00751	Hs.69771	4	Y	7.044175816
52228		Hs.26971	0		2.175502274
71863		Hs.5944	0		2.170776896
50383		Hs.23740	0		2.587153739
357278		Hs.47343	4	Y	2.393529214
811038		Hs.18778	0		2.255691126
808857		Hs.52515	1	Y	2.023587296
271045		Hs.74441	0		1.930205349
50905		Hs.184786	1		1.896309847
782547	AF015287	Hs.25338	2	Y	2.455219283
324951		Hs.40098	3		1.955543471
810446		Hs.109631	0		3.464426608
153355	P16619	Hs.73817	5	Y	2.626990002
781089	AF062649	Hs.156626	0	Y	2.489189205
773286	AF036241	Hs.184276	1		8.799805633
213651		Hs.104925	0		2.398126973
25194		Hs.25318	1		2.834887283
276871		Hs.184043	0		2.00699186
795909		Hs.21701	0	Y	2.459377472
811581		Hs.21835	0		2.569263169
200656		Hs.21851	2		3.92039854
342008	P19012	Hs.74070	2		3.356384801
809503		Hs.99367	0	Y	1.928108505
32083		Hs.22191	2		2.049717106
770983		Hs.17118	1		1.865630632
304858		Hs.107213	0		2.049853165
842918	AB008430	Hs.183738	0		2.141711971
346321		Hs.182471	0		3.824970262
283919		Hs.795	0		3.795566455
503602		Hs.107767	0		2.612878159
109863	P54851	Hs.29191	0	Y	3.561923378
51218		Hs.15386	0	Y	2.066705325
772880		Hs.11500	1	Y	4.081787334
502977	P49916	Hs.100299	0		2.038668092

Table 5

433350		Hs.878	0		2.257155121
490971		Hs.31305	0		2.544215707
758347		Hs.178603	5	Y	2.686373365
342082		Hs.6979	1		2.641698911
460398	P10147	Hs.73817	5	Y	2.767889773
343736	P51671	Hs.54460	2		3.339245888
47665	AF023268	Hs.19554	0	Y	2.344173581
80643	U70312	Hs.10283	1		2.457637012
882439	AB023165	Hs.3760	0		2.302220621
461759	D89050	Hs.77729	0		2.64941823
50276		Hs.17767	0	Y	2.107696989
345833		Hs.81361	3		2.152102833
41391		Hs.26040	0	Y	6.007361078
770993		Hs.22909	0		2.108510118
366041		Hs.194688	1		2.743119485
810089		Hs.67776	0		2.946522477
884655	D30658	Hs.75280	0		3.360851638
80649	U43195	Hs.17820	0		2.211837259
561916		Hs.6763	0		2.853713193
843075	Q02874	Hs.75258	4		3.702679899
250699		Hs.182885	1		2.16572872
48411		Hs.92414	0	Y	2.977434017
78041	P40189	Hs.71968	2		1.953595166
796876		Hs.9625	2		2.381297845
810326		Hs.17767	0	Y	3.167804458
134942		Hs.219614	0	Y	2.247313983
366481		Hs.91539	0		2.407501085
271568	P32391	Hs.5321	2		2.621240468
744944	U90236	Hs.22564	0		2.257800525
772425	U09278	Hs.418	1	Y	4.233360482
50562		Hs.31446	0		3.012961314
144849	L54057	Hs.29748	2		3.275134015
490329		Hs.61345	1		2.672829163
454908	P01215	Hs.119689	1	Y	1.967510663
85060		Hs.8185	0		2.360446965

Table 5

856447	P13284	Hs.14623	1	Y	2.482412531
842839		Hs.99969	3		2.111870651
838636	P51148	Hs.214190	0		2.211243368
840783		Hs.103657	1	Y	2.200499247
770997		Hs.55189	0	Y	2.134155441
66599	P18440	Hs.155956	1		32.08001083
78921		Hs.10760	0		11.81094892
1020212		Hs.179987	0		2.223711198
725335	Q13561	Hs.84153	0		2.005721153
503579	U59111	Hs.169993	0	Y	4.711618278
234329		Hs.5729	0		2.197408803
884822	L24804	Hs.75839	1		2.000176946
625234	Z97056	Hs.227342	1	Y	2.22612002
33611		Hs.22604	0	Y	1.87821767
491405		Hs.5807	2		2.529167659
132307		Hs.23823	0		2.404762883
504481	AF140242	Hs.107318	0	Y	3.634092645
857661	Q13435	Hs.75916	1		2.016155631
124447		Hs.100747	0		2.077486118
291880	P55001	Hs.83551	2		3.137421901
842825	P15170	Hs.2707	0		2.570742106
433253	P09467	Hs.574	1	Y	4.115649183
51700		Hs.5740	0	Y	2.997274448
855745	P01859	Hs.140	6		7.50454155
34442		Hs.22920	0	Y	11.63801197
83358		Hs.76704	1	Y	3.123865219
796765		Hs.7727	0	Y	2.314338304
838829		Hs.143323	0		2.791400022
840967		Hs.7773	0		2.621386749
897761	AB010882	Hs.9456	1		2.597385966
841067	P25787	Hs.21321	0		2.199304439
842767		Hs.21331	1		2.170525715
951305		Hs.21400	0	Y	1.886051707
788205		Hs.83484	0	Y	1.90788516
767706		Hs.5944	0	Y	2.854837696

Table 5

1472775		Hs.114599	1	3.577471317
785537		Hs.48448	0	2.142705584
593164	P51669	Hs.32690	0	2.546518949
730346	AF117615	Hs.108675	0	2.209710611
595238		Hs.85335	0	1.941001443
785840		Hs.19822	1	2.282815101
823656		Hs.43658	0	5.219450872
668451		Hs.6763	0	3.471338457
1409509		Hs.73980	1	11.01676306
197657	P30837	Hs.198225	0	2.133586729
788309	AB006572	Hs.7943	0	2.321790706
782406	P30520	Hs.90011	1	2.988586021
788445		Hs.106919	0	1.968854886
840598		Hs.15356	0	2.585873364
262834		Hs.42768	0	2.825451281
731240		Hs.6763	1	3.652119711
730942		Hs.15898	0	2.076342767
796266		Hs.22260	1	3.525203847
951241		Hs.62273	3	2.171687768
197903	AF074002	Hs.4082	2	2.549281546
593929		Hs.72865	0	2.061115575
1493160		Hs.2248	3	6.17728235
44387		Hs.30504	0	5.096969323
785701	Q13636	Hs.107325	1	6.918014303
785703		Hs.136253	0	6.706640702
754525		Hs.173059	0	3.526050572
39453		Hs.101282	0	2.882952595
367985		Hs.59548	0	2.457182247
731019		Hs.33719	0	2.296228212
838744		Hs.25732	0	2.507540414
665148		Hs.104106	0	2.47672456
306358	P38919	Hs.79768	0	2.906181278
34526	AF140242	Hs.107318	0	4.029441196
566486		Hs.69235	0	2.31202386
785707	AF044588	Hs.5101	2	4.166732708

Table 5

785795		Hs.15929	2		2.083882836
754594		Hs.170057	0	Y	3.059834996
764628		Hs.25933	0	Y	3.096289161
431397		Hs.80120	1	Y	4.210404845
344958	Q10472	Hs.214507	0	Y	2.359048117
840726		Hs.47026	0	Y	6.389383318
344959		Hs.58241	0		2.049195158
309496		Hs.28274	0		2.085558459
344505		Hs.58314	0	Y	6.12862391
752802		Hs.6314	0	Y	2.895115616
753411	AF092051	Hs.48730	0	Y	3.722247204
35010		Hs.106604	0		25.27908105
767495	P10071	Hs.72916	0		2.555134442
378461	P10451	Hs.313	0	Y	13.40428469
594693		Hs.55468	0		3.694727266
897542		Hs.23060	2		2.354430911
147834	AF041259	Hs.155040	0	Y	2.800028673
796656		Hs.10098	0		2.107048906
785694		Hs.3972	1		15.85607558
53122		Hs.12581	0		1.818419488
788377	P08397	Hs.3657	0	Y	2.529281069
647397		Hs.101174	0		3.069827692
951242		Hs.161489	1		2.035800011
281934		Hs.47188	0		3.512553417
626861		Hs.180481	0		2.026599219
731376		Hs.174104	0	Y	2.191154819
594684		Hs.73239	1		2.929595413
27404	AC004891	Hs.106552	0	Y	2.502577374
786509		Hs.16869	0	Y	5.826571388
752625		Hs.206778	0	Y	2.311642542
328868	P16070	Hs.169610	1	Y	1.831227203
812098		Hs.93847	0		2.597173048
796505		Hs.12680	1		2.010466887
796613		Hs.82985	0	Y	8.224932097
35147		Hs.23882	0	Y	2.158427464

Table 5

35484		Hs.23892	0	Y	3.238743847
768432		Hs.103316	0	Y	3.395384931
214008	P06899	Hs.146228	5	Y	1.957142508
796643		Hs.5025	1		2.824319215
1469425		Hs.43627	0		1.946145144
593431	Q16739	Hs.23703	4	Y	2.57166356
767180		Hs.77318	0		2.852511374
277226		Hs.40183	0		4.932894459
261852		Hs.40334	0	Y	1.940988504
285537		Hs.29269	0		2.319368826
773673	P34932	Hs.90093	0		2.072920407
629944		Hs.26941	0		3.313211968
897656		Hs.183738	0	Y	3.155416381
757143		Hs.76277	0		2.867392162
812277		Hs.33033	1	Y	2.427423479
1476065		Hs.81915	0		2.344280305
626001		Hs.24341	0		2.282344956
502200		Hs.24375	2	Y	2.205534492
593251	P32391	Hs.5321	2		2.111550132
743589		Hs.112712	0		2.355491896
593520		Hs.71475	1		2.502335195
730871		Hs.98186	0		3.319289442
627039		Hs.8850	1		2.871425628
122241	P49721	Hs.1390	1		2.149445394
767289		Hs.9398	1		1.871954952
898227		Hs.174203	1	Y	3.055592545
898229	AB015344	Hs.9589	0		2.35134451
811121		Hs.184779	0		2.295520654
773345		Hs.30464	0		2.530734718
510576		Hs.91011	3	Y	30.7673517
841621		Hs.100886	3	Y	9.398229653
1048599		Hs.112606	0		2.047562145
594600		Hs.101590	0		4.57986836
843098	P80723	Hs.79516	2		2.287691925
813730		Hs.76550	0		5.277733083

Table 5

754126	Hs.34806	0	7.348630418
29349	Hs.26155	0	1.844735105
841140	Hs.183212	2	2.408211799
838689	Hs.179902	0	4.541577397
951303	Hs.35304	0	2.190625295
296556	Hs.203411	0	4.337235896
787865	Hs.170144	0	2.18816765
253246	Hs.41228	0	3.011997753
253314	Hs.141376	0	3.234461234
280763	Hs.30120	0	2.224379074
773335	Hs.81234	0	2.203638713
257608	Hs.102465	0	3.654745548
626793	Hs.83724	1	2.204176679
502546	Hs.109694	0	2.687766812
1456160	Hs.71	0	1.758080703
950778	Hs.20555	0	2.8032255156
488301	Hs.26142	1	2.695892624
139771	D21239	0	2.560443458
124252	P10515	2	1.986650657
201931	Hs.116285	0	1.701172918
272694	Hs.114005	0	2.581052358
50175	Hs.108636	0	3.406937962
788087	Hs.76719	0	1.883404751
773138	Hs.23552	0	2.378684108
796711	Hs.107767	0	5.80201087
345801	Hs.82772	0	1.927488381
666707	Hs.84628	1	2.562714593
755762	Hs.55902	0	2.181135028
1472889	Hs.180577	0	3.868867382
470092	Hs.182778	1	2.932370253
686552	Hs.25220	1	2.553760464
205497	Hs.6831	0	2.144168419
160532	Hs.12646	0	9.738950199
413299	Hs.176588	0	1.910511922
235923	Hs.90421	0	1.866294567
	Hs.7274	0	

Table 5

416374	AF120265	Hs.11663	5	Y	9.179944406
502286		Hs.25431	0		3.483993079
505904		Hs.146233	2	Y	1.776947353
814232		Hs.5811	1	Y	2.005985977
133341		Hs.28980	3	Y	2.331270168
454232		Hs.112062	4		1.9015191
489631	P13611	Hs.81800	0	Y	4.039662547
489755		Hs.8850	1		2.527808441
178805		Hs.135056	1		2.537478355
725364		Hs.183986	0	Y	2.501335077
416478		Hs.14977	0	Y	4.042278487
361653		Hs.125056	0		4.845425096
382451	AF151830	Hs.18341	0		2.595842924
267666		Hs.22891	0		2.657107888
854450		Hs.6113	1		1.982668454
684277		Hs.87507	0		1.970221983
854570		Hs.95484	0		2.01893403
190692		Hs.169531	2		3.929647502
278531	P09669	Hs.82758	2		3.495073772
725707	AF081195	Hs.182591	0		2.742318823
324513		Hs.40098	3		2.53350959
814485		Hs.185771	0	Y	2.64314351
814618	Q01844	Hs.48306	0		1.896533006
825697		Hs.10590	0		3.818336804
745495		Hs.14570	0		2.089035722
160003		Hs.29724	0		3.305886836
281846	L13858	Hs.21371	0		2.2623821
281908		Hs.41271	3	Y	6.096273557
878259	Q06830	Hs.180909	2		1.97297035
826256		Hs.15791	1	Y	2.185048218
428184		Hs.30029	0	Y	2.037654742
739123	Q16739	Hs.23703	4	Y	4.080109252
826194		Hs.118739	1		3.176403157
155806	P29728	Hs.172285	1		2.251948357
685516		Hs.97101	0	Y	2.674807092

Table 5

739450		Hs.110379	0	Y	4.198712415
279963		Hs.48026	0	Y	4.556751707
773495		Hs.5378	0	Y	2.43951841
136508	P29728	Hs.172285	1		2.732022126
152289		Hs.106106	0		3.339851023
270558		Hs.28555	1	Y	11.79033043
824937		Hs.59498	1		2.4385121
397488		Hs.203492	2	Y	1.745148384
280544	Q10472	Hs.80120	1	Y	1.848010673
878253		Hs.76682	0	Y	2.076987158
815683		Hs.194688	1		1.953009406
878511		Hs.27309	0	Y	3.333054614
878550		Hs.7579	0		2.448566993
302955		Hs.76698	0		2.324332686
435447		Hs.26910	0	Y	2.135627259
884531		Hs.11463	0		2.111952056
825356		Hs.156906	1		2.274214236
277185		Hs.25063	1	Y	2.159732802
746084		Hs.196437	0		2.043566447
392366		Hs.193535	1		2.283951884
384634		Hs.186831	0	Y	1.963742682
381062		Hs.59773	0	Y	3.653077372
392399		Hs.137832	0	Y	1.9323428
262542		Hs.127310	0	Y	2.808434885
271865	Q10472	Hs.80120	1	Y	2.495192148
460002		Hs.55968	0		2.800544082
825715	L22343	Hs.226251	0		1.845174839
460164		Hs.15978	0		2.521642998
825719		Hs.165404	0		2.1100577
624785	AJ010842	Hs.18259	0		2.148369346
825736		Hs.192552	0		3.247200438
701371		Hs.21739	0		2.295038491
175533		Hs.32501	0		2.64401046
132326		Hs.63931	1		2.257048844
360743		Hs.25726	1	Y	5.017012153

Table 5

824201		Hs.204524	0	Y	2.104246519
26185	P45984	Hs.8325	0		2.155585592
487499		Hs.24758	0		2.197423368
824354	U17032	Hs.102548	0		2.567857202
32134		Hs.44131	0		2.777826229
490789		Hs.7393	0	Y	4.552322733
32621		Hs.168487	0		2.447351821
824376		Hs.180703	0	Y	4.010499859
190305		Hs.26815	0		2.152222452
392630		Hs.120910	0	Y	6.327110579
190321	O14610	Hs.181781	0	Y	2.339861801
190325		Hs.32539	0	Y	2.309739207
392647		Hs.43307	0		10.39124428
265103		Hs.23765	1	Y	2.313427714
858152	AF151867	Hs.179516	0		2.069789066
826072		Hs.41267	0	Y	2.199558715
859832	U35245	Hs.6650	0		3.646585262
826109		Hs.41371	0	Y	6.873858906
745174		Hs.227622	1		2.336390214
745192		Hs.106227	0	Y	2.229467826
815127		Hs.57572	0		5.588193369
455256		Hs.13201	1		2.536729784
878330		Hs.5994	1		2.249627264
122321	P13611	Hs.81800	0	Y	6.801922076
453710		Hs.39957	0		3.937395453
824421		Hs.11817	2		3.559098289
505958		Hs.12429	0		2.024821823
266696	Q15763	Hs.30081	1		2.455647721
268978		Hs.28439	0		1.948348145
1629420		Hs.28625	1		2.816058276
1473146		Hs.3454	0		2.461377861
488964		Hs.795	0		2.922288132
486731		Hs.31257	0		2.536538578
489680	AB011159	Hs.21862	0		2.751817314
1558108		Hs.54470	0		2.100871545

Table 5

155838	AC003108	Hs.107014	0	Y	2.208007515
50764		Hs.101174	0		4.274941437
788273		Hs.6000	0		2.505150418
888736		Hs.5807	0		1.963984521
45623		Hs.66170	0		2.704543729
436455		Hs.186810	0		3.027110145
858567		Hs.180391	1		2.580297935
51773	AC005154	Hs.12770	1		7.996825887
51851	AF041853	Hs.6529	0		2.315437022
1461528		Hs.125283	0	Y	2.882912785
701115		Hs.105088	0		2.754287472
1031003		Hs.116865	0		2.121754884
703637	AF081195	Hs.182591	0		2.129555262
845516		Hs.60238	0		2.361892712
878451		Hs.170204	0		2.645664649
461592		Hs.2178	5		5.057702038
878461		Hs.3239	0		2.495900053
824821		Hs.34892	1		2.112363277
878469		Hs.116707	0		2.42797476
461864		Hs.8123	0		2.926564497
824879		Hs.6949	0		2.352608404
32864		Hs.8852	0		2.436741845
346666		Hs.26289	1	Y	2.318984025
525775		Hs.11831	0		1.998833841
530460		Hs.14928	0		2.08935018
434776		Hs.80618	0		3.657404783
531031		Hs.184786	1		2.619631296
1473796		Hs.16206	1	Y	2.049071506
1631472		Hs.30251	0	Y	2.300449339
1631634		Hs.84009	0		2.545332173
1456701		Hs.122607	0		4.19875646
1456776		Hs.5372	0	Y	2.440404003
186767	P01912	Hs.180255	0		3.121185352
487882		Hs.4768	0	Y	2.370378262
1293191		Hs.117229	0		1.973993209

Table 5

759184	Hs.6845	0		3.128461451
50264	Hs.163546	0		2.076448172
32495	Hs.12183	0	Y	2.352281717
171973	AB023152 Hs.117663	0		2.851512374
32772	Hs.102469	0		2.078300765
860008	Hs.116909	0		2.36136918
149830	Hs.18618	0		2.03270814
745283	Hs.112094	0		6.350692351
826974	Hs.125233	0		2.181942164
746217	Hs.119424	0		2.307259346
845780	Hs.121663	0		2.46379808
826170	Hs.58570	0	Y	1.910059031
489533	Hs.5825	1	Y	2.401727329
505836	Hs.24283	1	Y	2.425064059
884430	Hs.179902	0	Y	3.01418439
582318	Hs.48928	0	Y	1.984267084
266500	Hs.8238	1	Y	7.427279406
219955	Hs.117906	0		2.415601844
110298	Hs.82171	1		2.92538951
283204	Hs.43558	1	Y	2.100700472
814222	Hs.22981	0		2.426253931
1457276	Hs.154737	2	Y	2.913316624
1474604	Hs.155541	0		2.29635585
1459105	Hs.66295	0		2.231808611
1474670	Hs.189090	0		2.872206566
856898	Hs.11135	0		2.081942952
447171	Hs.191322	0		2.128959252
854122	Hs.5432	0	Y	3.03962663
461933	Hs.193307	1		4.078765619
867606	Hs.180952	1		4.959955655
887717	Hs.122185	0		1.621354444
132702	Hs.75655	0	Y	2.327400544
1500821	Hs.5275	1		2.35166853
745394	Hs.9691	0	Y	2.154007941
1555427	Hs.65119	5	Y	3.174847073
	P07237			
	Q14344			

Table 5

234045	Hs.35696	0	1.988065867
470099	Hs.172924	0	1.960057553
470148	Hs.32478	0	2.199772384
470187	Hs.80120	1	3.082874955
40031	Hs.107637	2	1.890608889
884662	Hs.115837	0	2.942819467
471568	Hs.109706	1	3.470194622
435750	Hs.15921	0	3.081742643
284261	Hs.181385	0	2.4158489
1475195	Hs.117955	0	3.201079973
1460073	Hs.15165	2	2.748112011
1420830	Hs.165464	0	3.138003872
1635384	Hs.153961	1	2.920639144
1602209	Hs.14285	0	3.232624423
490813	Hs.100555	0	2.835996587
1584287	Hs.150275	0	2.912084218
491465	Hs.16390	0	2.376703087
1032734	Hs.179309	0	1.934483847
1276665	Hs.12243	0	3.481326836
866567	Hs.90093	0	3.579641654
80764	Hs.11156	0	2.234360431
26736	Hs.16936	0	3.238475202
462412	Hs.229227	0	2.803806486
1501546	Hs.123066	0	2.521443297
1551208	Hs.3742	0	2.177715859
239568	Hs.3346	0	3.8003133
753428	Hs.99769	0	9.734093906
897219	Hs.180895	5	2.644782494
235179	Hs.178011	0	2.079095745
240680	Hs.94631	0	2.629510253
1031072	Hs.23440	0	2.368360083
1292501	Hs.120369	0	2.653662294
40075	Hs.16085	0	2.602495253
23018	Hs.4552	0	2.660430042
1603583	AB015344 Hs.14368	1	3.019618449

Table 5

1605178		Hs.18272	1	Y	2.764208822
1606275		Hs.214455	0		2.26124918
1607018		Hs.26136	0		2.257735622
1593261		Hs.151536	0		2.079345396
744907		Hs.79672	1	Y	2.416299315
502536	AF016098	Hs.17778	0		1.721932752
854831		Hs.128685	1		4.415537225
84371	AB023152	Hs.12183	0	Y	2.412266619
859418		Hs.24713	0		2.332509763
855236		Hs.105872	0		2.020284254
878614	AF103939	Hs.24178	0		2.38771405
878713		Hs.29267	1	Y	2.62528755
146882	O00762	Hs.93002	0		3.114393532
147826		Hs.171965	1		2.759062894
1468070		Hs.78221	0		2.271591363
1557277		Hs.42287	2	Y	2.023351018
1558642		Hs.11365	1	Y	8.322406514
1604703		Hs.110309	0	Y	2.115590461
377801		Hs.182167	0		3.173704318
41207		Hs.18206	1	Y	2.131083075
854593		Hs.5716	0	Y	3.098672052
243068		Hs.22391	2	Y	2.549543009
854633		Hs.116773	0	Y	2.585161982
855029		Hs.9933	0		2.156912456
448417		Hs.48376	0		1.906992715
345752		Hs.28529	0		2.136350801
124064	AC004410	Hs.19399	0	Y	3.887053694
1613222		Hs.103329	0	Y	2.686547532
1435624		Hs.81800	0	Y	6.227108117
1460995		Hs.126018	0		1.856474993
1034644		Hs.105431	0	Y	3.272416269
1606780		Hs.119537	0		3.300592348
1492468		Hs.125783	0	Y	5.991795131
1600000		Hs.180779	0		2.676286436
1631194		Hs.30081	0		2.297008639

Table 5

858854	AB015344	Hs.227940	0		2.45924499
878617		Hs.4750	0	Y	4.868786031
447787	P30837	Hs.198225	0		2.509351135
855563		Hs.178941	0	Y	4.751029397
591439	AF069762	Hs.11615	1		2.586853192
378941		Hs.192712	0	Y	2.588674037
1272428		Hs.91582	0		2.126630823
153648		Hs.172928	1		12.74869661
1468160		Hs.4896	0	Y	3.073405508
1468834		Hs.125846	0		2.505192013
814769		Hs.38178	1		3.939542263
814913		Hs.121619	0	Y	2.5123674
80715	AF053233	Hs.172884	0		3.067858782
745556		Hs.97684	0		3.895139507
486035	S73498	Hs.21293	0		2.379467747
745572		Hs.90020	0	Y	2.198716345
486102	P41970	Hs.169478	0		1.930021086
24181		Hs.6224	0		3.041302477
25150		Hs.182811	0		2.03283288
306743		Hs.226039	0	Y	2.399666364
309563		Hs.166208	0	Y	2.571583284
856878		Hs.187934	0		2.145270516
857198		Hs.66103	0		2.008451966
1492238		Hs.25635	1		1.90659557
1492268		Hs.8164	0		2.688923456
1292121		Hs.120858	0		2.756590418
506128		Hs.25252	0		3.616363113
1631863		Hs.73933	0	Y	4.168571791
1632161		Hs.1575	0	Y	2.207418215
1517595		Hs.184339	1		2.270326627
645332		Hs.5025	0		2.644009269
448046		Hs.8850	0		2.035671714
23318	P08886	Hs.78305	0		2.284844005
855723		Hs.172035	1		5.825007297
40063		Hs.106419	0		4.16852721

Table 5

195652		Hs.11042	1		2.022230482
155227	P49411	Hs.12084	0	Y	2.444466795
486710	AF140242	Hs.107318	0		4.078618808
969560		Hs.7085	0	Y	2.365064484
969593		Hs.116922	0		2.803101191
201125	P06899	Hs.155800	0		2.057651567
1570318		Hs.39387	0		2.063610907
1572196		Hs.22209	0		1.825722189
481338		Hs.110378	0	Y	5.904318856
1049031		Hs.122053	0		2.172454195
324785	U90441	Hs.3622	2	Y	2.571071409
49482		Hs.114404	0	Y	2.671113725
746229	AB014587	Hs.3628	0	Y	2.051285429
26152		Hs.6185	0		2.480253698
26366	P30101	Hs.110029	0	Y	2.072518796
347282	Q13330	Hs.58598	2		3.012946029
867249		Hs.194860	0	Y	2.135097622
1637313		Hs.154978	0		2.315038374
1637343		Hs.79081	0		2.441463143
1536215		Hs.6079	0	Y	2.271759818
745136		Hs.116169	1		2.39692077
878152		Hs.31819	0	Y	2.470358125
463233		Hs.14435	0	Y	2.512808498
453276		Hs.122705	0		2.015319614
453308		Hs.164496	0	Y	2.246953958
26406	P54886	Hs.114366	0	Y	3.595387735
32407	P15735	Hs.196177	0	Y	2.920050466
435730		Hs.119549	0		1.719437717
487928		Hs.133481	0		3.111806588
201282		Hs.25264	0	Y	2.775273726
432086		Hs.125652	0	Y	2.442054608
487932		Hs.118739	0	Y	4.187413241
50982		Hs.22860	0		2.511252239

Table 6

Image Clone ID	GenBank Accession Number	Cluster Number	Number of subtracted libraries (out of six) where clone was found	Secretion Predicted?	Known Secretion?	Expression Ratio (Cancer / Normal)
205633	P13236	Hs.75703	0	Y	Y	5.605327066
768561	P13500	Hs.340	0	Y		286.4926191
183337	P28067	Hs.77522	5	Y		67.28736124
82991	P22413	Hs.11951	0	Y		6.79625083
768638		Hs.182575	0	Y		137.7559104
191664		Hs.108623	1	Y	Y	31.32956579
286444		Hs.18376	0	Y		5.448550496
141768	P04626	Hs.173664	0	Y		67.98243565
269815	P08476	Hs.197458	0	Y	Y	8.799295204
52096		Hs.74615	2	Y		77.41943316
782718	A27270	Hs.21922	2	Y		6.547398047
247635		Hs.92071	0	Y		8.545202242
299615		Hs.72805	2	Y		5.618194512
33045	P25929	Hs.154837	1	Y		82.16345161
811740		Hs.1142	0	Y		6.93413084
120189	P06731	Hs.173609	0	Y	Y	28.12068798
119882	P02679	Hs.75431	0	Y	Y	10.00142899
843321	P05787	Hs.23881	0	Y		5.097161034
714106		Hs.77274	1	Y	Y	8.060136216
503617	Q07325	Hs.77367	0	Y	Y	18.16657553
786675	Q14508	Hs.2719	0	Y		8.628533382
140301		Hs.28792	1	Y		13.7812527
110582		Hs.15061	0	Y		14.20501468
139354		Hs.15093	0	Y		11.02125306
193938		Hs.207865	0	Y		13.00174721
365665		Hs.61311	0		Y	10.47087894
67067		Hs.94795	0	Y		11.67949642
429466	AJ002305	Hs.6139	0	Y		13.21937668

Table 6

811028		Hs.9946	3	Y	15.9619503
810391	U03056	Hs.75619	0	Y	15.24643713
753770		Hs.195770	0	Y	5.337941756
841641	P24385	Hs.82932	0	Y	5.212952527
80109	P01908	Hs.53875	1	Y	7.18937028
144786	P21810	Hs.821	3	Y	12.07339227
782513		Hs.21205	0	Y	12.90952191
898092	P29279	Hs.75511	3	Y	14.44248323
277305	P01121	Hs.204354	5	Y	21.28283813
509823		Hs.73848	1	Y	70.96205767
52933	U41060	Hs.79136	5	Y	25.4445697
470379	D86640	Hs.56045	0	Y	13.33282025
382773		Hs.180532	1	Y	19.56105286
321705		Hs.6189	0	Y	20.37404042
121275	P05538	Hs.203656	0	Y	11.18343977
175103		Hs.57652	0	Y	9.947540835
840687	P15941	Hs.89603	1	Y	35.37538975
142788		Hs.9930	0	Y	13.70500256
839991		Hs.179573	2	Y	270.1338126
159608	P05090	Hs.75736	1	Y	165.8381654
29063		Hs.90797	0	Y	5.778002318
127120		Hs.81086	4	Y	36.89438299
271050	AF114165	Hs.82002	0	Y	11.15214427
45542		Hs.103391	0	Y	178.4295261
243741	Y12653	Hs.44532	0	Y	6.143305425
155083	P30101	Hs.110029	0	Y	5.623140978
526657	L47345	Hs.155202	0	Y	11.48223754
199628		Hs.138514	0	Y	6.177610005
703581	P10124	Hs.1908	2	Y	27.92802338
758266	P35443	Hs.75774	0	Y	9.821274672
130057		Hs.23057	2	Y	8.637192391
132140		Hs.93961	0	Y	9.208209297
487118	P22760	Hs.587	0	Y	24.80178683
823590	U14550	Hs.107573	1	Y	5.540513991
240518	P05154	Hs.1305	0	Y	200.3235451

Table 6

470379	D86640	Hs.56045	0	Y	12.66197619
309515	P49747	Hs.1584	1	Y	12.28065748
752732	Q13867	Hs.78943	0	Y	5.74495155
143846	U33837	Hs.153595	0	Y	10.41177781
840878	Q15392	Hs.195136	2	Y	9.481127436
530814		Hs.3314	0	Y	31.13002274
840384	Q12849	Hs.79295	2	Y	15.81363572
143887	AF015287	Hs.154737	2	Y	31.52609898
262920		Hs.174050	1	Y	8.096710975
332871		Hs.94037	0	Y	47.58014679
289337	P01859	Hs.140	6	Y	49.42575483
813714	AF010127	Hs.195175	0	Y	17.24538061
839101		Hs.74471	0	Y	12.76050466
83605	P31327	Hs.50966	0	Y	11.91904261
840818	AF043045	Hs.81008	1	Y	7.930414097
122159	P02461	Hs.119571	0	Y	216.8717592
712341	U85625	Hs.8297	0	Y	13.08487403
141209		Hs.28403	0	Y	10.82330231
66437	P18428	Hs.154078	0	Y	13.0466819
341680	P28300	Hs.102267	0	Y	35.38007638
155072		Hs.29190	0	Y	15.70016215
511428	U28249	Hs.92323	0	Y	6.839914573
196612	P39800	Hs.1696	0	Y	8.875738161
301122		Hs.81071	0	Y	23.31215417
756372	U77594	Hs.37682	0	Y	11.53678406
131839	P15328	Hs.73769	0	Y	12.28419437
789012	P98095	Hs.198862	1	Y	51.30738036
139009	P02751	Hs.118162	1	Y	22.54385839
210717	P34741	Hs.1501	0	Y	12.2879167
122159	P02461	Hs.119571	0	Y	612.5888811
361974	P21246	Hs.44	1	Y	22.52864326
347036		Hs.44865	0	Y	6.435900536
592243	P20061	Hs.2012	0	Y	34.61466719
713685	P07478	Hs.2003	0	Y	19.62960245
123561		Hs.75621	0	Y	9.656723542

Table 6

43977		Hs.75909	0	Y	14,292,46916
143287	P06731	Hs.169980	0	Y	13,187,77642
814378	U78095	Hs.31439	3	Y	8,057,095833
416567	P05154	Hs.76353	5	Y	5,036,661434
251019		Hs.181312	2	Y	5,481,281242
139009	P02751	Hs.118162	1	Y	20,958,42364
547247	P52823	Hs.197382	1	Y	5,628,837395
811162	Q06828	Hs.230	1	Y	17,165,80599
769921	O00762	Hs.93002	0	Y	6,443,805607
823590	U14550	Hs.107573	1	Y	6,095,493793
813823	P51884	Hs.79914	0	Y	56,908,51978
308901	Q16612	Hs.142827	4	Y	11,550,69819
70592	P05120	Hs.75716	2	Y	10,548,56455
769091	P28001	Hs.28777	0	Y	8,218,881948
109316	P01011	Hs.107325	0	Y	38,030,45471
782161		Hs.84084	1	Y	16,269,31789
811582		Hs.182793	1	Y	9,910,138102
130835		Hs.96125	1	Y	8,845,534314
813841		Hs.173736	1	Y	8,961,018602
812227		Hs.170222	0	Y	5,433,545065
124753	AF009746	Hs.94395	0	Y	6,067,975027
897531	P02751	Hs.82914	0	Y	6,859,788221
26617	Q13740	Hs.10247	1	Y	6,765,251703
784360	U97018	Hs.12451	0	Y	13,374,09486
782513		Hs.21205	0	Y	9,882,585473
208413		Hs.823	0	Y	11,961,43272
159725	P05981	Hs.32043	0	Y	11,741,71549
296568		Hs.50382	0	Y	10,580,51614
810813	P29034	Hs.38991	1	Y	7,851,063469
51447	P08637	Hs.763	1	Y	5,001,675119
810331	L42379	Hs.71816	5	Y	9,671,567118
897906	P15907	Hs.2554	0	Y	6,947,873136
121798		Hs.91165	0	Y	16,327,52381
782537		Hs.8154	0	Y	18,774,62497
130421		Hs.98606	0	Y	12,543,94232

Table 6

322223		Hs.108502	0	Y	12.74864761
755373	Q13105	Hs.33532	0	Y	10.02769998
586706	P06731	Hs.220529	0	Y	6.189927051
51178	Q92556	Hs.198613	0	Y	16.69754991
586609	AB007885	Hs.54697	3	Y	17.12582589
79726		Hs.11067	0	Y	14.20634739
52435		Hs.26979	0	Y	11.15659791
322461		Hs.35198	0	Y	12.13492492
811139	P01913	Hs.181366	1	Y	233.6544879
428721		Hs.148493	0	Y	78.71974577
810142		Hs.77961	0	Y	5.243247016
361323	Q08116	Hs.75256	0	Y	25.29907608
435036	X97324	Hs.3416	0	Y	24.4675747
51320		Hs.169482	0	Y	13.22709571
22374		Hs.13207	0	Y	20.02031122
47359	P05305	Hs.2271	0	Y	17.03637375
42021		Hs.30098	0	Y	7.13254404
129020		Hs.6649	0	Y	50.7602342
897593		Hs.6728	0	Y	16.29208625
33854		Hs.106642	1	Y	112.9771019
810224	AL049946	Hs.72157	2	Y	6.441162754
215000		Hs.198726	0	Y	28.89457421
345034	AF073957	Hs.24395	5	Y	8.820505907
344430	P18075	Hs.170195	1	Y	72.23448317
154472		Hs.748	0	Y	24.32459398
855547		Hs.181366	1	Y	96.21944165
138788	P16471	Hs.1906	0	Y	99.56358145
854701	P38571	Hs.85226	0	Y	5.89352095
257162		Hs.173609	0	Y	6.082496596
51344		Hs.6434	0	Y	12.99416248
343987	P27487	Hs.44926	0	Y	34.07603082
854746	P50290	Hs.146409	0	Y	5.473485638
265853		Hs.42927	5	Y	5.554228891
324690		Hs.40098	3	Y	28.88536226
741977	P00751	Hs.69771	4	Y	46.69762637

Table 6

45501		Hs.23961	0	Y	16.58986615
430231		Hs.47269	0	Y	6.807556298
357278		Hs.47343	4	Y	13.03891137
488140		Hs.44883	0	Y	6.259378009
325641	M73713	Hs.169980	0	Y	23.13308057
454822	P19827	Hs.2777	0	Y	29.80347335
460487	P02788	Hs.347	0	Y	25.77672661
1035889		Hs.3235	0	Y	193.8382308
52704		Hs.21802	0	Y	6.877621544
77651	AJ011972	Hs.6764	0	Y	10.97623394
856434	AF002163	Hs.75056	0	Y	21.40958612
487327		Hs.110453	0	Y	91.56101705
782547	AF015287	Hs.25338	2	Y	9.136653273
324665		Hs.143809	0	Y	14.38677986
153355	P16619	Hs.73817	5	Y	5.668142175
781089	AF062649	Hs.159626	0	Y	5.476719985
770388	AB000712	Hs.5372	0	Y	12.4326427
725877	P10909	Hs.75106	0	Y	35.41286983
49275		Hs.225695	0	Y	7.271679582
796287	P06753	Hs.31239	0	Y	16.45982273
509554	AC004520	Hs.22900	0	Y	17.40521425
488431		Hs.21894	1	Y	5.000188503
415229		Hs.37331	0	Y	18.62795199
809357		Hs.21970	0	Y	5.116566909
283315	P15259	Hs.46039	0	Y	10.14511823
51210	AB022918	Hs.34578	0	Y	20.72332967
46105		Hs.22226	0	Y	21.60106246
725395	AF143807	Hs.169895	1	Y	6.014355031
841845		Hs.84359	2	Y	10.44648036
489373		Hs.25557	0	Y	5.302056878
366887		Hs.170195	1	Y	22.59027147
769886		Hs.125359	0	Y	11.06083918
811024	Q10589	Hs.118110	0	Y	7.398087651
868332		Hs.914	0	Y	60.66165226
741831	P55058	Hs.154854	0	Y	15.00257155

Table 6

50354	P32243	Hs.30837	0	Y	26.20981668
240663		Hs.75621	0	Y	6.164797551
68049		Hs.103391	0	Y	5.169048171
298417	Q07654	Hs.82961	1	Y	8.59608543
47378		Hs.22265	0	Y	12.96650517
243882	U78305	Hs.100980	0	Y	28.02648834
877664		Hs.3763	0	Y	10.26951837
949988		Hs.180320	1	Y	10.70867341
772880		Hs.11500	1	Y	6.465170777
341641		Hs.7949	0	Y	31.05273383
758347		Hs.178603	5	Y	9.772759095
460398	P10147	Hs.73817	5	Y	6.561562252
343736	P51671	Hs.54460	2	Y	5.906869601
472095	Q15842	Hs.102308	0	Y	15.6681957
772890		Hs.172108	0	Y	5.316748565
868304	P03996	Hs.195851	0	Y	16.0581775
121406	P55347	Hs.158225	0	Y	5.687712863
41391		Hs.26040	0	Y	19.4498269
41825		Hs.26096	0	Y	12.07841314
368663		Hs.48353	0	Y	7.169825492
742132	P05161	Hs.833	1	Y	5.756444852
452374	P19652	Hs.572	0	Y	6.46522421
429434		Hs.184532	0	Y	5.766696374
755578	AC003007	Hs.184601	1	Y	5.273247546
46367	P35790	Hs.77221	0	Y	20.43673254
32962		Hs.22545	0	Y	15.77948436
796148		Hs.7122	0	Y	12.5006982
269029		Hs.166436	0	Y	12.26750596
950429		Hs.26549	0	Y	7.458661016
491367		Hs.42392	0	Y	11.7617619
307249		Hs.54946	0	Y	5.49512842
306841	P01850	Hs.2003	0	Y	21.23649758
52741	X97187	Hs.26630	0	Y	12.50924719
772425	U09278	Hs.418	1	Y	7.111913141
41822		Hs.26102	1	Y	7.159112893

Table 6

811000	L13210	Hs.79339	1	Y	13.2879885
897924		Hs.5472	0	Y	5.182574146
40364		Hs.26244	0	Y	8.739959421
50484	AF035013	Hs.26322	0	Y	11.68124618
272706	AB022918	Hs.34578	0	Y	18.05731096
415204		Hs.20188	0	Y	246.6733879
773330	Q14956	Hs.82226	1	Y	14.85184114
81449		Hs.4932	0	Y	11.05760557
49842		Hs.7908	0	Y	17.17163598
50114		Hs.167399	1	Y	6.013769204
454908	P01215	Hs.119689	1	Y	77.50252108
856447	P13284	Hs.14823	1	Y	5.306007822
841624		Hs.179669	0	Y	6.256306795
810367		Hs.16236	0	Y	5.520319664
377441	P33764	Hs.2961	0	Y	48.23843238
344126		Hs.58330	0	Y	17.42654997
503579	U59111	Hs.169993	0	Y	8.170006532
22389		Hs.13222	0	Y	11.70513283
32050		Hs.21380	0	Y	14.80307244
51672		Hs.112278	0	Y	17.00164688
1049033		Hs.86368	0	Y	5.552950164
236059	Q14451	Hs.86859	0	Y	15.93583732
488578		Hs.165216	0	Y	10.69122819
504481	AF140242	Hs.107318	0	Y	6.287887033
291880	P55001	Hs.83551	2	Y	5.113603275
590264	P08493	Hs.75742	1	Y	319.2287619
252515	Q16719	Hs.81771	0	Y	30.45481813
433253	P09467	Hs.574	1	Y	6.646462351
325182	P19022	Hs.161	0	Y	54.23107451
724888	P13584	Hs.687	1	Y	15.85153056
51700		Hs.5740	0	Y	7.120940176
34442		Hs.22920	0	Y	26.77227609
40100		Hs.54865	0	Y	10.66470798
530185		Hs.79197	0	Y	10.21794823
83358		Hs.76704	1	Y	5.066144758

Table 6

796079		Hs.107765	0	Y	13.33337423
509688	AF006622	Hs.74466	0	Y	32.77384818
51800	P49750	Hs.26956	1	Y	12.67426159
951305		Hs.21400	0	Y	10.61201098
262061		Hs.42622	0	Y	12.74380124
743309		Hs.97814	0	Y	11.7569098
26884		Hs.176977	0	Y	10.83093523
767706		Hs.5944	0	Y	7.174663252
271744		Hs.115263	0	Y	9.366329325
767775		Hs.12101	0	Y	7.65459267
289645	P51693	Hs.74665	0	Y	20.30305918
504959		Hs.32405	0	Y	15.81647508
838611	P05090	Hs.75736	1	Y	192.3342175
666451		Hs.6763	0	Y	7.084388697
1409509		Hs.73980	1	Y	23.56420483
753248		Hs.100113	0	Y	17.21478312
37539		Hs.7004	0	Y	19.62705961
39191		Hs.194327	0	Y	11.03712751
39442		Hs.21896	0	Y	14.46547088
39453		Hs.101282	0	Y	9.474806165
344834		Hs.58093	0	Y	14.79546631
1161830		Hs.68877	0	Y	55.46099391
278430		Hs.6841	0	Y	5.867931305
811953	P33991	Hs.99433	1	Y	8.010667351
858450	L10333	Hs.99947	0	Y	6.91159879
34526	AF140242	Hs.107318	0	Y	6.700127027
595037	AF095448	Hs.194691	0	Y	5.09346396
754581		Hs.6338	0	Y	10.32531108
754594		Hs.170057	0	Y	6.394967547
431397	Q10472	Hs.80120	1	Y	5.869100283
41905		Hs.26679	0	Y	24.03663291
434768	P19883	Hs.9914	0	Y	5.974791662
625616	AB005659	Hs.34744	1	Y	7.514554559
840726		Hs.47026	0	Y	9.980084697
784178		Hs.27860	0	Y	17.94202511

Table 6

344505		Hs.58314	0	Y	16.51741389
199635	P11464	Hs.173609	0	Y	22.19509456
752802		Hs.6314	0	Y	14.84556402
753411	AF092051	Hs.48730	0	Y	5.879304595
813408		Hs.6314	0	Y	5.088411732
753417	AF035528	Hs.153863	0	Y	11.26569657
378461	P10451	Hs.313	0	Y	28.48795908
328287		Hs.170042	0	Y	5.316836461
796732		Hs.62905	4	Y	35.80052117
1048586		Hs.431	1	Y	6.501948912
647397		Hs.101174	0	Y	6.123898971
767176		Hs.78276	0	Y	5.878725356
358217		Hs.58367	0	Y	5.886129992
428592		Hs.60006	0	Y	7.019482152
27404	AC004891	Hs.106552	0	Y	5.333145531
786609		Hs.16869	0	Y	8.044278612
280082		Hs.48008	0	Y	10.39076902
752625		Hs.206778	0	Y	6.334043329
753909		Hs.105641	0	Y	10.30079968
796613		Hs.82985	0	Y	13.73184471
35147		Hs.23882	0	Y	6.20402449
1410444		Hs.1257	0	Y	35.08042366
35484		Hs.23892	0	Y	8.697444715
768432		Hs.103316	0	Y	20.88536119
593431	Q16739	Hs.23703	4	Y	7.757041113
742672		Hs.97722	0	Y	6.478973955
897656		Hs.183738	0	Y	7.106962713
1056172		Hs.112242	0	Y	12.22112635
753982		Hs.7882	5	Y	17.35990848
35575	AF151854	Hs.185057	1	Y	13.33335871
1475659		Hs.75799	0	Y	5.844968911
898227		Hs.174203	1	Y	9.286585718
347345		Hs.58632	0	Y	11.54990087
510578		Hs.91011	3	Y	92.89335475
841621		Hs.100686	3	Y	26.5689756

Table 6

682479	Hs.69999	0	Y	11.05433707
753076	Hs.98874	0	Y	25.71610616
1323448	Hs.17409	1	Y	5.91681239
838689	Hs.179902	0	Y	8.564045749
37901	Hs.26640	0	Y	6.0090261
38015	Hs.21527	0	Y	11.59223967
253314	Hs.141376	0	Y	5.403061544
276412	Hs.102550	0	Y	5.823009508
785866	Hs.31386	1	Y	8.192959579
450777	Hs.7647	1	Y	6.719588185
823688	Hs.25253	2	Y	13.70799286
1456160	Hs.71	0	Y	5.577389547
30275	Hs.100866	0	Y	10.55620586
272694	Hs.108636	0	Y	6.27358973
48404	Hs.106619	0	Y	12.58241074
785930	Hs.77637	0	Y	36.89827693
627306	Hs.169286	0	Y	5.738033416
418159	Hs.6139	0	Y	10.70338043
782804	Hs.99158	0	Y	10.81862606
812143	Hs.14146	0	Y	5.592159568
1455835	Hs.17958	0	Y	25.99784944
1472689	Hs.182778	1	Y	31.71914518
470092	Hs.25220	1	Y	14.18721241
156043	Hs.27268	0	Y	18.42944168
713213	Hs.19399	0	Y	19.57239207
160532	Hs.176588	0	Y	33.66388374
713263	Hs.89040	0	Y	10.49952302
416374	Hs.11683	5	Y	74.44793889
132636	Hs.75799	0	Y	6.737262483
431553	Hs.163610	0	Y	7.168833618
489631	Hs.81800	0	Y	5.789645367
450398	Hs.227459	0	Y	7.188236607
416479	Hs.14977	0	Y	11.18111615
223043		0	Y	22.3169845
194717	Hs.34333	0	Y	11.30160113

Table 6

451707		Hs.19978	0	Y	6.287471852
451753	U40282	Hs.48531	3	Y	14.28682569
824109	AB011141	Hs.34871	0	Y	39.27779786
435890		Hs.189299	0	Y	8.820463809
417777		Hs.118371	0	Y	12.15004989
325111		Hs.55950	0	Y	20.06930485
704023		Hs.96561	0	Y	97.024449466
383189		Hs.128056	0	Y	7.869955829
281908		Hs.41271	3	Y	10.97038738
294578		Hs.75621	0	Y	180.1662123
739123		Hs.23703	4	Y	6.564097933
449034	Q16739	Hs.122631	0	Y	6.000589924
826273		Hs.30464	0	Y	7.015268541
363007		Hs.106576	0	Y	5.032173895
249784		Hs.16580	0	Y	8.178950224
685516		Hs.97101	0	Y	8.420285721
739450		Hs.110379	0	Y	9.184224987
740780	AB012917	Hs.57771	1	Y	15.55643658
279963		Hs.48026	0	Y	13.30971522
826995		Hs.16726	1	Y	8.551959356
754625		Hs.70604	3	Y	12.91268072
270558		Hs.28555	1	Y	38.94166722
397488		Hs.203492	2	Y	5.212739753
815740		Hs.86429	0	Y	5.845137158
137704		Hs.221202	2	Y	24.33949266
602885		Hs.54580	0	Y	5.144014857
878605		Hs.29005	1	Y	12.66212374
381036		Hs.227459	0	Y	13.17442605
381062		Hs.59773	0	Y	5.051108502
262542		Hs.127310	0	Y	5.020009469
684879	P06280	Hs.69089	0	Y	13.18203513
360743		Hs.25726	1	Y	7.122573491
431231	AJ132819	Hs.6059	0	Y	17.33060408
413292		Hs.62604	0	Y	20.19977455
413080		Hs.220567	0	Y	12.08883896

Table 6

451657	Hs.18180	0	Y	16.22081248
415589	Hs.91668	0	Y	9.758358543
25664	Hs.78006	0	Y	41.96780379
490789	Hs.7393	0	Y	8.618104244
824376	Hs.180703	0	Y	7.538784111
129032	P05154	5	Y	7.828374081
392630	Hs.76353	0	Y	51.14700619
286135	Hs.127356	0	Y	13.73276849
825742	P43005	0	Y	12.50695469
826109	Hs.81139	0	Y	20.46308344
825270	Hs.41371	0	Y	24.12164595
121857	Hs.109315	1	Y	7.675934078
122321	Hs.16244	0	Y	8.167873554
50772	Hs.81800	0	Y	6.062768709
48183	Hs.13467	2	Y	9.719778158
1474156	Hs.31141	1	Y	8.376639082
448489	Hs.118867	0	Y	47.16025386
454317	Hs.184640	1	Y	84.11664063
397604	Hs.228711	0	Y	6.031781991
712600	Hs.103184	0	Y	13.10215532
32887	Hs.110099	0	Y	5.132335154
489533	Hs.22941	1	Y	5.080593165
884430	Hs.5925	1	Y	5.034268893
266500	Hs.179902	0	Y	13.77109813
1457276	Hs.8236	1	Y	17.99979744
1474987	Hs.154737	2	Y	15.56939368
1574594	Hs.71520	0	Y	15.18681826
586742	Hs.82045	0	Y	8.191680522
447173	Hs.16420	0	Y	23.00159789
858115	Hs.222038	0	Y	14.05499285
1505360	Hs.20166	0	Y	12.12374384
1555427	Hs.36980	1	Y	5.911340504
39833	Hs.65119	5	Y	34.77026468
725143	Hs.95594	0	Y	80.14724289
1475195	Hs.35563	0	Y	7.123688718
	Hs.117955	0	Y	
	AF118023			
	AC005162			

Table 6

1420830	Hs.165484	0	Y	6.469901899
462237	Hs.30085	1	Y	5.382360005
462325	Hs.11638	0	Y	16.45544402
377573	Hs.124134	0	Y	5.842023308
447208	Hs.47504	0	Y	5.011813612
1635874	Hs.8693	0	Y	6.299540768
1605426	Hs.22972	0	Y	6.652996237
744918	Hs.116080	0	Y	6.339484513
855079	Hs.16522	0	Y	5.017783002
1558642	Hs.11365	1	Y	32.68449022
377987	Hs.64859	1	Y	11.87868467
124064	Hs.19399	0	Y	5.88562551
1435624	Hs.81800	0	Y	7.277512266
1034644	Hs.105431	0	Y	6.819865186
1492468	Hs.125783	0	Y	22.0879966
745001	Hs.116118	0	Y	10.08320816
878617	Hs.4750	0	Y	7.069745851
855563	Hs.179941	0	Y	9.949852117
470049	Hs.173824	0	Y	5.65601162
1468160	Hs.4896	0	Y	5.578163857
323599	Hs.1735	1	Y	35.3679555
1505534	Hs.165615	1	Y	11.93545235
506128	Hs.25252	0	Y	8.11526289
1631863	Hs.73933	0	Y	7.275155082
461336	Hs.110379	0	Y	13.06130819
814053	Hs.11638	1	Y	66.21666121
449275		0	Y	7.006039821
32407	Hs.196177	0	Y	5.99353338
487932	Hs.118739	0	Y	8.023453706
49228	Hs.13405	0	Y	5.18345556

Table 7

ID Number	Image Clone ID	GenBank Accession Number	Cluster Number (Unigene 94)	Number of subtracted libraries (out of six) where clone was found	Secretion Predicted?	Known Secretion?	Expression Ratio (Cancer / Normal)
376	269815	P08476	Hs.197458	0		Y	7.565
384	309515	P49747	Hs.1584	1		Y	7.853
4626	592243	P20061	Hs.2012	0		Y	10.842
4747	814378	U78095	Hs.31439	3	Y	Y	4.701
7018	810224	AL049946	Hs.72157	2	Y	Y	4.193
16612	510576		Hs.91011	3	Y	Y	57.008
16638	841621		Hs.100686	3		Y	15.382
22032	824376		Hs.180703	0	Y	Y	6.019

TABLE 8

Sequenc #	Accession #	Sequence 52	AI281115
Sequence 1	AB002330	Sequence 53	T11367
Sequence 2	AA373018	Sequence 54	AA404281
Sequence 3	AI761106	Sequence 55	AI380093
Sequence 4	U48271	Sequence 56	AA147803
Sequence 5	AA043226	Sequence 57	D31762
Sequence 6	AA460921	Sequence 58	AA768548
Sequence 7	G29998	Sequence 59	AA071169
Sequence 8	G11594	Sequence 60	AA526060
Sequence 9	AF081484	Sequence 61	AA630407
Sequence 10	AA599801	Sequence 62	M78906
Sequence 11	AL049381	Sequence 63	AI039651
Sequence 12	R25232	Sequence 64	AA227954
Sequence 13	AF047472	Sequence 65	L15388
Sequence 14	H14378	Sequence 66	AA282436
Sequence 15	T47448	Sequence 67	E00985
Sequence 16	V40508	Sequence 68	U28833
Sequence 17	AI222365	Sequence 69	AF121890
Sequence 18	X04098	Sequence 70	AB002303
Sequence 19	AI141565	Sequence 71	J05593
Sequence 20	I35434	Sequence 72	AA582928
Sequence 21	AI608725	Sequence 73	AA243780
Sequence 22	AI440284	Sequence 74	X64875
Sequence 23	V41921	Sequence 75	AB011126
Sequence 24	AB002315	Sequence 76	AF099149
Sequence 25	X05231	Sequence 77	AF010313
Sequence 26	X89426	Sequence 78	AI707471
Sequence 27	U56255	Sequence 79	AA569766
Sequence 28	AL035306	Sequence 80	AA150356
Sequence 29	D26070	Sequence 81	AF057160
Sequence 30	AA256422	Sequence 82	L19711
Sequence 31	E02602	Sequence 83	W02294
Sequence 32	X81713	Sequence 84	R75969
Sequence 33	AF078828	Sequence 85	AA284532
Sequence 34	AA318193	Sequence 86	D78757
Sequence 35	AA195458	Sequence 87	D45917
Sequence 36	AA482432	Sequence 88	D45887
Sequence 37	U25435	Sequence 89	AA367588
Sequence 38	S77512	Sequence 90	D82254
Sequence 39	AA298918	Sequence 91	AA127461
Sequence 40	AA120818	Sequence 92	L25610
Sequence 41	AA865239	Sequence 93	AA403008
Sequence 42	X56807	Sequence 94	AI183387
Sequence 43	AA081269	Sequence 95	R69949
Sequence 44	E03415	Sequence 96	X00566
Sequence 45	AB017169	Sequence 97	AB011182
Sequence 46	AA609555	Sequence 98	AI075938
Sequence 47	AF039018	Sequence 99	W30780
Sequence 48	AI275381	Sequence 100	L38487
Sequence 49	G34637	Sequence 101	X15879
Sequence 50	AI263150	Sequence 102	AI131183
Sequence 51	V59620	Sequence 103	AI668847

TABLE 8

Sequence 104	AA302502	Sequence 156	AA757069
Sequence 105	AI752983	Sequence 157	Y00503
Sequence 106	U56725	Sequence 158	M22348
Sequence 107	AA037281	Sequence 159	AI264128
Sequence 108	AA565948	Sequence 160	AI590707
Sequence 109	AA058398	Sequence 161	AF004426
Sequence 110	AA056176	Sequence 162	AI769238
Sequence 111	AA772132	Sequence 163	AA487510
Sequence 112	AA455235	Sequence 164	AL050028
Sequence 113	AA100426	Sequence 165	AA868404
Sequence 114	AI200045	Sequence 166	H80042
Sequence 115	D12676	Sequence 167	AA863199
Sequence 116	H57528	Sequence 168	AA333390
Sequence 117	X04697	Sequence 169	AI082817
Sequence 118	G14639	Sequence 170	AA446375
Sequence 119	E03414	Sequence 171	AA983296
Sequence 120	N57174	Sequence 172	AF020500
Sequence 121	AI335277	Sequence 173	AA135768
Sequence 122	AA887673	Sequence 174	AI149258
Sequence 123	AI244268	Sequence 175	AI742050
Sequence 124	Z44305	Sequence 176	D53129
Sequence 125	AF095891	Sequence 177	M15990
Sequence 126	AA362604	Sequence 178	AI391519
Sequence 127	AA639640	Sequence 179	AA633901
Sequence 128	X04744	Sequence 180	AI753569
Sequence 129	AA156838	Sequence 181	G15893
Sequence 130	Z29328	Sequence 182	AL048118
Sequence 131	AI042302	Sequence 183	AA455660
Sequence 132	AF125098	Sequence 184	AA329545
Sequence 133	AI360681	Sequence 185	AF064104
Sequence 134	AF055033	Sequence 186	M11718
Sequence 135	AA374857	Sequence 187	E01591
Sequence 136	AI344691	Sequence 188	AA089985
Sequence 137	S71730	Sequence 189	AA416979
Sequence 138	U36764	Sequence 190	AA644680
Sequence 139	G15856	Sequence 191	AI267162
Sequence 140	L23114	Sequence 192	X69181
Sequence 141	AI590227	Sequence 193	AI267282
Sequence 142	X52221	Sequence 194	X22255
Sequence 143	AF055007	Sequence 195	Y08890
Sequence 144	AA632653	Sequence 196	AF131760
Sequence 145	AA669381	Sequence 197	AL049265
Sequence 146	AA037120	Sequence 198	M17885
Sequence 147	AF132951	Sequence 199	AF022385
Sequence 148	H71983	Sequence 200	AA010180
Sequence 149	AF016266	Sequence 201	AF023476
Sequence 150	AF040990	Sequence 202	R31669
Sequence 151	AB004854	Sequence 203	U18247
Sequence 152	D49396	Sequence 204	W31194
Sequence 153	R67494	Sequence 205	AA593130
Sequence 154	AA186479	Sequence 206	AI753968
Sequence 155	X66899	Sequence 207	AA373414

TABLE 8

Sequence 208	AA393650	Sequence 260	AF061016
Sequence 209	X60708	Sequence 261	E07890
Sequence 210	U83303	Sequence 262	D14043
Sequence 211	AF032119	Sequence 263	AJ006470
Sequence 212	AA043064	Sequence 264	AA055266
Sequence 213	AA261835	Sequence 265	AA159985
Sequence 214	M23449	Sequence 266	AI049723
Sequence 215	AB023159	Sequence 267	AA233192
Sequence 216	AA314348	Sequence 268	AA742706
Sequence 217	H94781	Sequence 269	AA410586
Sequence 218	U50079	Sequence 270	G07205
Sequence 219	F06747	Sequence 271	H81514
Sequence 220	AA302666	Sequence 272	R58887
Sequence 221	AI568038	Sequence 273	AA446537
Sequence 222	AA557195	Sequence 274	AA063478
Sequence 223	AA310364	Sequence 275	AA373723
Sequence 224	U50928	Sequence 276	U06863
Sequence 225	AA361447	Sequence 277	AA479402
Sequence 226	H54576	Sequence 278	J03578
Sequence 227	AA167755	Sequence 279	AA404253
Sequence 228	AC005755	Sequence 280	W76437
Sequence 229	L26336	Sequence 281	AA045381
Sequence 230	M14219	Sequence 282	D00099
Sequence 231	R80512	Sequence 283	M26512
Sequence 232	AC004067	Sequence 284	AA059036
Sequence 233	AF065684	Sequence 285	L19559
Sequence 234	J04478	Sequence 286	AA594000
Sequence 235	AB018289	Sequence 287	X64229
Sequence 236	AA427664	Sequence 288	U23070
Sequence 237	AA583044	Sequence 289	AF009242
Sequence 238	M21574	Sequence 290	AA581018
Sequence 239	S60099	Sequence 291	AF086249
Sequence 240	AA599304	Sequence 292	X04758
Sequence 241	AA169564	Sequence 293	AA047890
Sequence 242	W22634	Sequence 294	AA903223
Sequence 243	AI610794	Sequence 295	D14812
Sequence 244	AF117211	Sequence 296	AI261199
Sequence 245	U90942	Sequence 297	AA193674
Sequence 246	G26793	Sequence 298	AI089452
Sequence 247	AA074549	Sequence 299	G27725
Sequence 248	AA345127	Sequence 300	X55525
Sequence 249	D78361	Sequence 301	X17042
Sequence 250	M76377	Sequence 302	AA298077
Sequence 251	AF151884	Sequence 303	AA043473
Sequence 252	AF025304	Sequence 304	AA703549
Sequence 253	AB023187	Sequence 305	X85018
Sequence 254	AL049959	Sequence 306	D21262
Sequence 255	AI160200	Sequence 307	AI127013
Sequence 256	M76233	Sequence 308	AI436644
Sequence 257	AF004562	Sequence 309	AA723605
Sequence 258	X52678	Sequence 310	U89942
Sequence 259	Y10658	Sequence 311	W26373

TABLE 8

Sequence 312	AF058953	Sequence 364	AA748042
Sequence 313	AA443864	Sequence 365	L12002
Sequence 314	T74430	Sequence 366	AA373244
Sequence 315	AA629688	Sequence 367	S64596
Sequence 316	AA164966	Sequence 368	N31142
Sequence 317	AI750261	Sequence 369	AI459549
Sequence 318	S71513	Sequence 370	AA021265
Sequence 319	AA037152	Sequence 371	X59543
Sequence 320	AA128778	Sequence 372	W03531
Sequence 321	AA514912	Sequence 373	Y10319
Sequence 322	AA452375	Sequence 374	AF100761
Sequence 323	AA132849	Sequence 375	M86609
Sequence 324	L42024	Sequence 376	AA593669
Sequence 325	T65427	Sequence 377	AI088338
Sequence 326	AL049943	Sequence 378	AF070600
Sequence 327	X82494	Sequence 379	AF070561
Sequence 328	AI459753	Sequence 380	X06256
Sequence 329	M10941	Sequence 381	AB028952
Sequence 330	Y14551	Sequence 382	V20862
Sequence 331	U67280	Sequence 383	N42279
Sequence 332	X54315	Sequence 384	R64182
Sequence 333	T99039	Sequence 385	AA463289
Sequence 334	U00946	Sequence 386	M10036
Sequence 335	AA595701	Sequence 387	AA171848
Sequence 336	AF100741	Sequence 388	AI126573
Sequence 337	L20088	Sequence 389	H12828
Sequence 338	U35139	Sequence 390	AA044756
Sequence 339	AR007257	Sequence 391	AF021232
Sequence 340	U20982	Sequence 392	AI421105
Sequence 341	D14878	Sequence 393	AA148087
Sequence 342	AA573819	Sequence 394	I09499
Sequence 343	AF151809	Sequence 395	AI095129
Sequence 344	AA126605	Sequence 396	AA146717
Sequence 345	W67729	Sequence 397	AI475537
Sequence 346	AI632932	Sequence 398	AI677769
Sequence 347	AI204548	Sequence 399	AR009833
Sequence 348	X01742	Sequence 400	AA368244
Sequence 349	AF078749	Sequence 401	AI753615
Sequence 350	L15702	Sequence 402	D17278
Sequence 351	AA317121	Sequence 403	W15301
Sequence 352	AF047438	Sequence 404	AA058752
Sequence 353	D87127	Sequence 405	AI280637
Sequence 354	G23896	Sequence 406	AA599478
Sequence 355	X97324	Sequence 407	X73608
Sequence 356	N76198	Sequence 408	AF006264
Sequence 357	U24576	Sequence 409	AA535091
Sequence 358	D13866	Sequence 410	AA350289
Sequence 359	U78093	Sequence 411	AA229529
Sequence 360	AI262100	Sequence 412	AI376301
Sequence 361	J04513	Sequence 413	AA157608
Sequence 362	AA165485	Sequence 414	AI274317
Sequence 363	AA084678	Sequence 415	AA063373

TABLE 8

Sequence 416	AA437239	Sequence 468	AF059524
Sequence 417	AA372793	Sequence 469	AA427890
Sequence 418	AA210780	Sequence 470	S45875
Sequence 419	AV109198	Sequence 471	Y12711
Sequence 420	X00737	Sequence 472	X12496
Sequence 421	AA864840	Sequence 473	AA039766
Sequence 422	AA043788	Sequence 474	AI086754
Sequence 423	AF086336	Sequence 475	M63180
Sequence 424	AF047437	Sequence 476	N45416
Sequence 425	AI378592	Sequence 477	AA460882
Sequence 426	AL037802	Sequence 478	AA853398
Sequence 427	AI929339	Sequence 479	AI086057
Sequence 428	N52770	Sequence 480	AL045196
Sequence 429	AF086352	Sequence 481	AA098979
Sequence 430	X52246	Sequence 482	AA084188
Sequence 431	N25092	Sequence 483	AA460226
Sequence 432	N28395	Sequence 484	AA423890
Sequence 433	AA315904	Sequence 485	AA775486
Sequence 434	AA046820	Sequence 486	AB014548
Sequence 435	Y13936	Sequence 487	AA554437
Sequence 436	AI253335	Sequence 488	AI824284
Sequence 437	M30257	Sequence 489	AL110247
Sequence 438	H10420	Sequence 490	W67131
Sequence 439	AI027998	Sequence 491	M63889
Sequence 440	M62403	Sequence 492	AI472536
Sequence 441	D31885	Sequence 493	AA160520
Sequence 442	AA443241	Sequence 494	AA826256
Sequence 443	AA384155	Sequence 495	AA700054
Sequence 444	AI086748	Sequence 496	AB011165
Sequence 445	AI754509	Sequence 497	X07077
Sequence 446	L19597	Sequence 498	AA314021
Sequence 447	AA379863	Sequence 499	AI635254
Sequence 448	AF021834	Sequence 500	AB007883
Sequence 449	M11353	Sequence 501	AL038417
Sequence 450	AI751475	Sequence 502	M95929
Sequence 451	AB023169	Sequence 503	M37104
Sequence 452	D44466	Sequence 504	A07020
Sequence 453	AA634681	Sequence 505	D00735
Sequence 454	M27492	Sequence 506	Z47087
Sequence 455	V84464	Sequence 507	AF153809
Sequence 456	AL050179	Sequence 508	AA296846
Sequence 457	D21243	Sequence 509	X95749
Sequence 458	AA678481	Sequence 510	AA194152
Sequence 459	AA044374	Sequence 511	AF086120
Sequence 460	AA307819	Sequence 512	D79205
Sequence 461	M33197	Sequence 513	AB011079
Sequence 462	AF132000	Sequence 514	AI053964
Sequence 463	AA852185	Sequence 515	M22918
Sequence 464	AA748034	Sequence 516	X03559
Sequence 465	U59863	Sequence 517	AB021288
Sequence 466	AI129966	Sequence 518	AI719420
Sequence 467	Z24725	Sequence 519	U21128

TABLE 8

Sequence 520	AJ388069	Sequence 572	Z74615
Sequence 521	AF147329	Sequence 573	X56457
Sequence 522	X02761	Sequence 574	AF056717
Sequence 523	AA053486	Sequence 575	T20576
Sequence 524	AA524479	Sequence 576	S78569
Sequence 525	AJ007398	Sequence 577	U76549
Sequence 526	U43701	Sequence 578	G06686
Sequence 527	X64084	Sequence 579	AF016098
Sequence 528	AI267454	Sequence 580	AF038187
Sequence 529	AJ004955	Sequence 581	Y11651
Sequence 530	R16006	Sequence 582	AB007889
Sequence 531	AI632869	Sequence 583	AC007051
Sequence 532	M80563	Sequence 584	AB015594
Sequence 533	AA368675	Sequence 585	AF086484
Sequence 534	X14768	Sequence 586	AL035461
Sequence 535	AA906587	Sequence 587	AF017418
Sequence 536	AA459880	Sequence 588	M24194
Sequence 537	AA375257	Sequence 589	V59520
Sequence 538	U15795	Sequence 590	Z26248
Sequence 539	AI360651	Sequence 591	U43286
Sequence 540	W44372	Sequence 592	L28010
Sequence 541	AA643774	Sequence 593	X95632
Sequence 542	AF044221	Sequence 594	V59590
Sequence 543	AA339992	Sequence 595	I14045
Sequence 544	AB020715	Sequence 596	V61478
Sequence 545	C17545	Sequence 597	U72209
Sequence 546	AA188025	Sequence 598	AB018327
Sequence 547	I59730	Sequence 599	AB001575
Sequence 548	AA045556	Sequence 600	D90452
Sequence 549	AI123013	Sequence 601	J02645
Sequence 550	E05515	Sequence 602	Y09328
Sequence 551	AI087271	Sequence 603	AL035405
Sequence 552	AA477144	Sequence 604	AC005531
Sequence 553	D13630	Sequence 605	AF150962
Sequence 554	H12747	Sequence 606	G30939
Sequence 555	L06132	Sequence 607	G06503
Sequence 556	R82345	Sequence 608	M64257
Sequence 557	AI290941	Sequence 609	AA374361
Sequence 558	V59599	Sequence 610	AA210727
Sequence 559	A14829	Sequence 611	M65062
Sequence 560	U90549	Sequence 612	AA421227
Sequence 561	AA129679	Sequence 613	AA332672
Sequence 562	AA025057	Sequence 614	AF070550
Sequence 563	X53615	Sequence 615	AB029026
Sequence 564	AB020723	Sequence 616	D25283
Sequence 565	U16850	Sequence 617	M24630
Sequence 566	X13345	Sequence 618	AA045221
Sequence 567	A18757	Sequence 619	AA301781
Sequence 568	G22983	Sequence 620	AA427711
Sequence 569	D83779	Sequence 621	AI269205
Sequence 570	U80771	Sequence 622	AL079444
Sequence 571	J04795	Sequence 623	AL049969

TABLE 8

Sequence 624	AW020970	Sequence 676	AI591201
Sequence 625	T58681	Sequence 677	X81295
Sequence 626	H84433	Sequence 678	U53874
Sequence 627	AA007606	Sequence 679	D14710
Sequence 628	AA853476	Sequence 680	AA994838
Sequence 629	AF029786	Sequence 681	D45021
Sequence 630	AC000119	Sequence 682	V68635
Sequence 631	V72101	Sequence 683	A60690
Sequence 632	AA488444	Sequence 684	AB023140
Sequence 633	AB014595	Sequence 685	AB006202
Sequence 634	E06949	Sequence 686	M26325
Sequence 635	G10627	Sequence 687	U07550
Sequence 636	AA833905	Sequence 688	D87735
Sequence 637	AA954500	Sequence 689	V00478
Sequence 638	AL046467	Sequence 690	V34271
Sequence 639	AI218178	Sequence 691	M65028
Sequence 640	U39050	Sequence 692	X71973
Sequence 641	AF151807	Sequence 693	AF061243
Sequence 642	AA577605	Sequence 694	J03040
Sequence 643	M37825	Sequence 695	H05686
Sequence 644	R56773	Sequence 696	AL049940
Sequence 645	X06269	Sequence 697	AI217773
Sequence 646	AA703779	Sequence 698	U66075
Sequence 647	AA572758	Sequence 699	AA478355
Sequence 648	AA836012	Sequence 700	AB023227
Sequence 649	AA679328	Sequence 701	AF001893
Sequence 650	AI267185	Sequence 702	AA954061
Sequence 651	AA598653	Sequence 703	U62740
Sequence 652	AA190738	Sequence 704	W51811
Sequence 653	A17003	Sequence 705	N80776
Sequence 654	U22384	Sequence 706	L47162
Sequence 655	AF012126	Sequence 707	V06592
Sequence 656	Z47054	Sequence 708	M16279
Sequence 657	AI075338	Sequence 709	J03464
Sequence 658	AL114973	Sequence 710	AA278789
Sequence 659	AA046572	Sequence 711	AA279360
Sequence 660	W76278	Sequence 712	X35729
Sequence 661	AA932207	Sequence 713	AA112013
Sequence 662	AI342840	Sequence 714	U47077
Sequence 663	U16306	Sequence 715	D17409
Sequence 664	AA490172	Sequence 716	Z30311
Sequence 665	AI087159	Sequence 717	AI093496
Sequence 666	N79650	Sequence 718	AA131442
Sequence 667	AA303683	Sequence 719	AL117588
Sequence 668	M59979	Sequence 720	AI675151
Sequence 669	AA079806	Sequence 721	AI765994
Sequence 670	R34765	Sequence 722	AI683487
Sequence 671	R09231	Sequence 723	L18964
Sequence 672	U07919	Sequence 724	AI623979
Sequence 673	T19961	Sequence 725	AL110183
Sequence 674	S50179	Sequence 726	AC005213
Sequence 675	L14812	Sequence 727	AF047337

TABLE 8

Sequence 728	AA805260	Sequence 780	AA394288
Sequence 729	AA938465	Sequence 781	E02516
Sequence 730	AI074445	Sequence 782	AA441838
Sequence 731	AI982899	Sequence 783	L07956
Sequence 732	AA961489	Sequence 784	AF055581
Sequence 733	AA505399	Sequence 785	D50372
Sequence 734	C05952	Sequence 786	AJ238979
Sequence 735	D83077	Sequence 787	M38083
Sequence 736	D54330	Sequence 788	X52947
Sequence 737	AA281916	Sequence 789	AB027760
Sequence 738	AA053650	Sequence 790	L12350
Sequence 739	AA046605	Sequence 791	AF090094
Sequence 740	AA216658	Sequence 792	AA398603
Sequence 741	AI341247	Sequence 793	AA211149
Sequence 742	AJ001050	Sequence 794	M74777
Sequence 743	AF078952	Sequence 795	G29752
Sequence 744	AA418478	Sequence 796	AA962252
Sequence 745	N98506	Sequence 797	AI300566
Sequence 746	AI753391	Sequence 798	H95146
Sequence 747	H03754	Sequence 799	AI598275
Sequence 748	D86963	Sequence 800	X80910
Sequence 749	AA446505	Sequence 801	M34276
Sequence 750	AI627310	Sequence 802	AF155238
Sequence 751	AA122182	Sequence 803	AA779727
Sequence 752	AI866002	Sequence 804	M34539
Sequence 753	A00127	Sequence 805	AB026190
Sequence 754	AA902483	Sequence 806	AA361821
Sequence 755	AI688914	Sequence 807	U41850
Sequence 756	AF151888	Sequence 808	D25248
Sequence 757	X94232	Sequence 809	AA861332
Sequence 758	D17268	Sequence 810	AL040936
Sequence 759	M69023	Sequence 811	U27768
Sequence 760	L42450	Sequence 812	AR001278
Sequence 761	AF054187	Sequence 813	AA983343
Sequence 762	T19055	Sequence 814	AB023163
Sequence 763	AF026219	Sequence 815	M97501
Sequence 764	AF124598	Sequence 816	AI640873
Sequence 765	V40521	Sequence 817	AF110137
Sequence 766	AI473744	Sequence 818	AJ005282
Sequence 767	AI422893	Sequence 819	A17786
Sequence 768	AA724967	Sequence 820	M92650
Sequence 769	AA599298	Sequence 821	AF043117
Sequence 770	AL050091	Sequence 822	AF151868
Sequence 771	U34605	Sequence 823	D50406
Sequence 772	X06700	Sequence 824	AF070571
Sequence 773	Y07570	Sequence 825	AI719534
Sequence 774	AF168956	Sequence 826	X57527
Sequence 775	AB002383	Sequence 827	AL117477
Sequence 776	AA101485	Sequence 828	AF100757
Sequence 777	H70950	Sequence 829	D14689
Sequence 778	AI005232	Sequence 830	Z68694
Sequence 779	AA448803	Sequence 831	AA150366

TABLE 8

Sequence 832	AA027916	Sequence 884	AA374833
Sequence 833	AA593916	Sequence 885	AA037733
Sequence 834	AA315380	Sequence 886	H02133
Sequence 835	AI497945	Sequence 887	U09278
Sequence 836	Z72499	Sequence 888	AA504219
Sequence 837	AA094129	Sequence 889	R91396
Sequence 838	N73165	Sequence 890	M84739
Sequence 839	N76481	Sequence 891	W92189
Sequence 840	M11749	Sequence 892	AA173344
Sequence 841	L27476	Sequence 893	AF125102
Sequence 842	U57847	Sequence 894	M28226
Sequence 843	AI349598	Sequence 895	C18327
Sequence 844	AI151412	Sequence 896	AA037080
Sequence 845	M10119	Sequence 897	H07071
Sequence 846	M73548	Sequence 898	E02628
Sequence 847	D17265	Sequence 899	U40282
Sequence 848	AL080250	Sequence 900	AA007581
Sequence 849	AB020684	Sequence 901	D14665
Sequence 850	W81052	Sequence 902	AA359432
Sequence 851	D13666	Sequence 903	AF131784
Sequence 852	AB015907	Sequence 904	J02854
Sequence 853	M96982	Sequence 905	AL047817
Sequence 854	X04741	Sequence 906	AA398507
Sequence 855	J05459	Sequence 907	AA363596
Sequence 856	V04699	Sequence 908	AA314616
Sequence 857	J03132	Sequence 909	AI199501
Sequence 858	L42379	Sequence 910	AI039087
Sequence 859	AF014402	Sequence 911	C17797
Sequence 860	D78014	Sequence 912	AI073868
Sequence 861	T29858	Sequence 913	X63053
Sequence 862	AA043141	Sequence 914	AI268335
Sequence 863	AI275042	Sequence 915	AA316622
Sequence 864	AA757127	Sequence 916	AI267262
Sequence 865	N31381	Sequence 917	L76687
Sequence 866	AI077939	Sequence 918	AI457612
Sequence 867	M14648	Sequence 919	AA426022
Sequence 868	AI685282	Sequence 920	AA248675
Sequence 869	L36643	Sequence 921	F11882
Sequence 870	N52703	Sequence 922	AI752379
Sequence 871	D14658	Sequence 923	AA316064
Sequence 872	AI338310	Sequence 924	AL079971
Sequence 873	AA037732	Sequence 925	AF002697
Sequence 874	L22009	Sequence 926	AA444104
Sequence 875	AI677797	Sequence 927	D86326
Sequence 876	AA071084	Sequence 928	AA410325
Sequence 877	M13520	Sequence 929	X13839
Sequence 878	J03202	Sequence 930	F07186
Sequence 879	D21863	Sequence 931	AA039259
Sequence 880	AA112058	Sequence 932	AA829527
Sequence 881	AA425726	Sequence 933	AA148035
Sequence 882	AA913606	Sequence 934	U16307
Sequence 883	AI160315	Sequence 935	V59556

TABLE 8

Sequence 936	R32254	Sequence 988	U81504
Sequence 937	M58581	Sequence 989	M30393
Sequence 938	X57352	Sequence 990	W26608
Sequence 939	AF093419	Sequence 991	AJ010953
Sequence 940	AA209369	Sequence 992	AA603425
Sequence 941	AA056070	Sequence 993	AI340582
Sequence 942	AA143548	Sequence 994	X57119
Sequence 943	AF010472	Sequence 995	M19715
Sequence 944	AA932802	Sequence 996	D13969
Sequence 945	AA347235	Sequence 997	AA604283
Sequence 946	X05185	Sequence 998	AI540845
Sequence 947	AA300590	Sequence 999	AI751565
Sequence 948	AF026850	Sequence 1000	AF086322
Sequence 949	AA465346	Sequence 1001	AF038404
Sequence 950	D63998	Sequence 1002	AI249470
Sequence 951	AA778403	Sequence 1003	N57339
Sequence 952	AI669229	Sequence 1004	AW020397
Sequence 953	AF147308	Sequence 1005	T62811
Sequence 954	M25246	Sequence 1006	M68520
Sequence 955	Q66638	Sequence 1007	AA741746
Sequence 956	T19390	Sequence 1008	AI888079
Sequence 957	AA159812	Sequence 1009	AF092128
Sequence 958	AA298567	Sequence 1010	N34819
Sequence 959	AA194107	Sequence 1011	U31906
Sequence 960	AW006464	Sequence 1012	AA404544
Sequence 961	X07884	Sequence 1013	AA035036
Sequence 962	H08531	Sequence 1014	AA927399
Sequence 963	AA703921	Sequence 1015	AI754847
Sequence 964	AA132297	Sequence 1016	AA514339
Sequence 965	AI628774	Sequence 1017	N28427
Sequence 966	AA587287	Sequence 1018	AA302225
Sequence 967	U85245	Sequence 1019	T50032
Sequence 968	AL117496	Sequence 1020	AA329658
Sequence 969	AA458537	Sequence 1021	D31784
Sequence 970	U55206	Sequence 1022	D21254
Sequence 971	AL036992	Sequence 1023	AA343832
Sequence 972	AB004788	Sequence 1024	AA035786
Sequence 973	H70961	Sequence 1025	J00126
Sequence 974	AA514276	Sequence 1026	AI940389
Sequence 975	J04173	Sequence 1027	AA991791
Sequence 976	AA075585	Sequence 1028	AA373617
Sequence 977	AA569025	Sequence 1029	AI422889
Sequence 978	R08982	Sequence 1030	M60828
Sequence 979	AA046129	Sequence 1031	AI753485
Sequence 980	X57398	Sequence 1032	W73176
Sequence 981	AA401501	Sequence 1033	AA114160
Sequence 982	AI267502	Sequence 1034	J02642
Sequence 983	Y15062	Sequence 1035	AF131737
Sequence 984	AI719154	Sequence 1036	U39067
Sequence 985	D55904	Sequence 1037	AI138353
Sequence 986	AA125838	Sequence 1038	R89712
Sequence 987	H52071	Sequence 1039	AA043828

TABLE 8

Sequence 1040	X82456	Sequence 1092	AA622754
Sequence 1041	AI750821	Sequence 1093	J05682
Sequence 1042	AF097330	Sequence 1094	M23254
Sequence 1043	AI074652	Sequence 1095	AA436100
Sequence 1044	AA456063	Sequence 1096	U24105
Sequence 1045	AA192957	Sequence 1097	AA405280
Sequence 1046	AA349251	Sequence 1098	L39833
Sequence 1047	AA082747	Sequence 1099	AA010039
Sequence 1048	AA653712	Sequence 1100	AF054992
Sequence 1049	AF027515	Sequence 1101	AA752787
Sequence 1050	R67773	Sequence 1102	AF029689
Sequence 1051	AA677370	Sequence 1103	M26679
Sequence 1052	AI953237	Sequence 1104	AA195203
Sequence 1053	X98296	Sequence 1105	AI589668
Sequence 1054	AA449389	Sequence 1106	AA315506
Sequence 1055	AA290695	Sequence 1107	H16282
Sequence 1056	L78132	Sequence 1108	AF061326
Sequence 1057	AF103906	Sequence 1109	AA083405
Sequence 1058	AA441881	Sequence 1110	AL050209
Sequence 1059	D87445	Sequence 1111	AA443877
Sequence 1060	AA814511	Sequence 1112	AA053711
Sequence 1061	W52686	Sequence 1113	C93706
Sequence 1062	AL045852	Sequence 1114	AI919292
Sequence 1063	AI801326	Sequence 1115	AI298604
Sequence 1064	AI814160	Sequence 1116	AA029105
Sequence 1065	AA973825	Sequence 1117	X95701
Sequence 1066	AI150208	Sequence 1118	M85357
Sequence 1067	AA348392	Sequence 1119	AB017363
Sequence 1068	AA443438	Sequence 1120	AB002306
Sequence 1069	AI750696	Sequence 1121	X04526
Sequence 1070	AB018342	Sequence 1122	X67001
Sequence 1071	H56754	Sequence 1123	D50922
Sequence 1072	AI670903	Sequence 1124	AA004741
Sequence 1073	AF124440	Sequence 1125	AA430432
Sequence 1074	AA772032	Sequence 1126	AI267373
Sequence 1075	AA243794	Sequence 1127	W48619
Sequence 1076	AA081945	Sequence 1128	X56667
Sequence 1077	AA752775	Sequence 1129	AI391190
Sequence 1078	AI867294	Sequence 1130	AI830138
Sequence 1079	AF052162	Sequence 1131	L40392
Sequence 1080	AA167682	Sequence 1132	Z45277
Sequence 1081	AA669840	Sequence 1133	H63662
Sequence 1082	AI422167	Sequence 1134	D13633
Sequence 1083	AI573140	Sequence 1135	U31384
Sequence 1084	AA007419	Sequence 1136	L40400
Sequence 1085	AB007963	Sequence 1137	AF009615
Sequence 1086	AA543066	Sequence 1138	Z24724
Sequence 1087	AA970372	Sequence 1139	AI086827
Sequence 1088	AB029003	Sequence 1140	AL110265
Sequence 1089	U54831	Sequence 1141	AA311300
Sequence 1090	AA484416	Sequence 1142	AF022815
Sequence 1091	AL050073	Sequence 1143	AA600082

TABLE 8

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Sequence 1145	AA393062	Sequence 1197	AA291984
Sequence 1146	AA493775	Sequence 1198	AI311091
Sequence 1147	AL050108	Sequence 1199	AA708613
Sequence 1148	AI765792	Sequence 1200	D55654
Sequence 1149	R63766	Sequence 1201	AA454069
Sequence 1150	AI692905	Sequence 1202	AA004267
Sequence 1151	AF052130	Sequence 1203	AI620015
Sequence 1152	AA115099	Sequence 1204	T47040
Sequence 1153	AI214054	Sequence 1205	M14505
Sequence 1154	X01060	Sequence 1206	D37781
Sequence 1155	D86958	Sequence 1207	AA211366
Sequence 1156	D00015	Sequence 1208	AI066593
Sequence 1157	AA306190	Sequence 1209	R15973
Sequence 1158	AA234443	Sequence 1210	D78611
Sequence 1159	AI420933	Sequence 1211	AA148566
Sequence 1160	AI281273	Sequence 1212	AA167821
Sequence 1161	AI557247	Sequence 1213	AA086379
Sequence 1162	AA912445	Sequence 1214	D13388
Sequence 1163	AA071138	Sequence 1215	AA214212
Sequence 1164	W01258	Sequence 1216	AB028990
Sequence 1165	N30755	Sequence 1217	AL080211
Sequence 1166	AA599881	Sequence 1218	AA614610
Sequence 1167	AL049834	Sequence 1219	AL049282
Sequence 1168	AA131924	Sequence 1220	AA062976
Sequence 1169	AA449988	Sequence 1221	AL046230
Sequence 1170	AA002101	Sequence 1222	C15493
Sequence 1171	AB002310	Sequence 1223	U16954
Sequence 1172	R91084	Sequence 1224	AA489718
Sequence 1173	U14577	Sequence 1225	AB018270
Sequence 1174	E07265	Sequence 1226	AI752963
Sequence 1175	AA056281	Sequence 1227	AL044649
Sequence 1176	AA361763	Sequence 1228	AA044788
Sequence 1177	AA195499	Sequence 1229	AF000670
Sequence 1178	AW029102	Sequence 1230	AA147622
Sequence 1179	AB011542	Sequence 1231	AF069301
Sequence 1180	X85373	Sequence 1232	AA878932
Sequence 1181	AI249962	Sequence 1233	X97766
Sequence 1182	W45226	Sequence 1234	M16006
Sequence 1183	D50683	Sequence 1235	AI061247
Sequence 1184	AI767326	Sequence 1236	U70312
Sequence 1185	AI093233	Sequence 1237	AA599601
Sequence 1186	X85019	Sequence 1238	AI755142
Sequence 1187	AL110269	Sequence 1239	N66351
Sequence 1188	AI754021	Sequence 1240	H38017
Sequence 1189	AA361614	Sequence 1241	H00215
Sequence 1190	T94832	Sequence 1242	AA976852
Sequence 1191	D13748	Sequence 1243	AI312552
Sequence 1192	AA004583	Sequence 1244	D14660
Sequence 1193	AI457626	Sequence 1245	AI500553
Sequence 1194	AA453424	Sequence 1246	D83174
Sequence 1195	R91229	Sequence 1247	AI750595

TABLE 8

Sequence 1248	AI638323	Sequence 1300	U28727
Sequence 1249	AI628630	Sequence 1301	X14420
Sequence 1250	AA420458	Sequence 1302	AF013759
Sequence 1251	AI807462	Sequence 1303	X07979
Sequence 1252	AL035706	Sequence 1304	AF052088
Sequence 1253	AL110164	Sequence 1305	AB002365
Sequence 1254	AA361453	Sequence 1306	AA402590
Sequence 1255	D49387	Sequence 1307	AF042385
Sequence 1256	L25616	Sequence 1308	AF042379
Sequence 1257	AI435548	Sequence 1309	AF151895
Sequence 1258	AI123697	Sequence 1310	J02683
Sequence 1259	AF010316	Sequence 1311	X94440
Sequence 1260	D29992	Sequence 1312	U37283
Sequence 1261	X85055	Sequence 1313	AB012664
Sequence 1262	AI436456	Sequence 1314	N30062
Sequence 1263	Z30171	Sequence 1315	AU037034
Sequence 1264	AI612913	Sequence 1316	AB021868
Sequence 1265	D38552	Sequence 1317	D10523
Sequence 1266	AB023173	Sequence 1318	X54304
Sequence 1267	M37190	Sequence 1319	M14058
Sequence 1268	X15881	Sequence 1320	L01042
Sequence 1269	U37122	Sequence 1321	AF064084
Sequence 1270	AF055899	Sequence 1322	U48296
Sequence 1271	AI587288	Sequence 1323	AF106682
Sequence 1272	AF055014	Sequence 1324	D50857
Sequence 1273	AA844484	Sequence 1325	X74837
Sequence 1274	AF084457	Sequence 1326	U72515
Sequence 1275	D29810	Sequence 1327	AB030905
Sequence 1276	AF053318	Sequence 1328	M20778
Sequence 1277	AF081258	Sequence 1329	AL117604
Sequence 1278	AF082858	Sequence 1330	U84573
Sequence 1279	D86981	Sequence 1331	X04665
Sequence 1280	G34894	Sequence 1332	X14787
Sequence 1281	AF118395	Sequence 1333	J03004
Sequence 1282	M81757	Sequence 1334	J03007
Sequence 1283	M31159	Sequence 1335	U20285
Sequence 1284	D28481	Sequence 1336	X82200
Sequence 1285	V57441	Sequence 1337	AF053641
Sequence 1286	AB023171	Sequence 1338	AL117434
Sequence 1287	M94856	Sequence 1339	AB024518
Sequence 1288	AB015228	Sequence 1340	Y08991
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Sequence 1292	AB018329	Sequence 1344	Y00978
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Sequence 1296	X69910	Sequence 1348	D87078
Sequence 1297	AF047042	Sequence 1349	X74929
Sequence 1298	M55210	Sequence 1350	AF155114
Sequence 1299	K02765	Sequence 1351	L40357

TABLE 8

Sequence 1352	AF059611	Sequence 1404	E02610
Sequence 1353	Z22658	Sequence 1405	AL050367
Sequence 1354	D45131	Sequence 1406	AF095136
Sequence 1355	AB023224	Sequence 1407	AF065482
Sequence 1356	M35252	Sequence 1408	X12765
Sequence 1357	AB014569	Sequence 1409	AB018262
Sequence 1358	M55409	Sequence 1410	U54804
Sequence 1359	X58141	Sequence 1411	M16247
Sequence 1360	AL049415	Sequence 1412	AL050125
Sequence 1361	D87811	Sequence 1413	X76939
Sequence 1362	M31165	Sequence 1414	AA313131
Sequence 1363	Y00706	Sequence 1415	AC007590
Sequence 1364	AF069378	Sequence 1416	X78669
Sequence 1365	AF060152	Sequence 1417	AF086628
Sequence 1366	M69066	Sequence 1418	AB018356
Sequence 1367	AF068754	Sequence 1419	AF055017
Sequence 1368	M98343	Sequence 1420	AF060515
Sequence 1369	L06419	Sequence 1421	S69738
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Sequence 1378	AC004223	Sequence 1430	AI367162
Sequence 1379	D49489	Sequence 1431	U28686
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Sequence 1382	AL078459	Sequence 1434	M60255
Sequence 1383	AB028986	Sequence 1435	AC005881
Sequence 1384	E12457	Sequence 1436	AF008551
Sequence 1385	M17517	Sequence 1437	X80199
Sequence 1386	E01662	Sequence 1438	AA069809
Sequence 1387	D13665	Sequence 1439	AA485885
Sequence 1388	M24915	Sequence 1440	AI267583
Sequence 1389	L20298	Sequence 1441	D29954
Sequence 1390	AL050022	Sequence 1442	AA931794
Sequence 1391	U25276	Sequence 1443	R60669
Sequence 1392	V05728	Sequence 1444	D87717
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Sequence 1395	V52604	Sequence 1447	AA150985
Sequence 1396	AC002553	Sequence 1448	AI215907
Sequence 1397	L19184	Sequence 1449	AF044195
Sequence 1398	D14530	Sequence 1450	AB020880
Sequence 1399	U18197	Sequence 1451	AW020650
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Sequence 1402	G37316	Sequence 1454	AI022134
Sequence 1403	AL050224	Sequence 1455	J04080

TABLE 8

Sequence 1456	AA091445	Sequence 1508	AI536912
Sequence 1457	AI681252	Sequence 1509	AA121343
Sequence 1458	W79345	Sequence 1510	AA579865
Sequence 1459	AA810340	Sequence 1511	U03688
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Sequence 1466	AA402606	Sequence 1518	R79904
Sequence 1467	AA157065	Sequence 1519	X22229
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Sequence 1469	M38690	Sequence 1521	AF098968
Sequence 1470	D29963	Sequence 1522	R35089
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Sequence 1472	AI014957	Sequence 1524	AL110197
Sequence 1473	AL117413	Sequence 1525	AI300178
Sequence 1474	AA039916	Sequence 1526	AI969271
Sequence 1475	AA095727	Sequence 1527	U22431
Sequence 1476	M98833	Sequence 1528	M55153
Sequence 1477	E06721	Sequence 1529	AR004664
Sequence 1478	AL117597	Sequence 1530	AB006713
Sequence 1479	AA373557	Sequence 1531	Z85999
Sequence 1480	U14970	Sequence 1532	AF006070
Sequence 1481	AA399974	Sequence 1533	AL080058
Sequence 1482	AU074171	Sequence 1534	L13977
Sequence 1483	AI220869	Sequence 1535	AI480123
Sequence 1484	AB018256	Sequence 1536	U33821
Sequence 1485	U90904	Sequence 1537	AF077951
Sequence 1486	AI672472	Sequence 1538	AB028969
Sequence 1487	AI831009	Sequence 1539	J03210
Sequence 1488	AA622844	Sequence 1540	AF070640
Sequence 1489	AL117662	Sequence 1541	M37744
Sequence 1490	D00017	Sequence 1542	U38292
Sequence 1491	AB011153	Sequence 1543	AA470049
Sequence 1492	L27259	Sequence 1544	L20861
Sequence 1493	AA321128	Sequence 1545	S42303
Sequence 1494	D63475	Sequence 1546	X66363
Sequence 1495	H45311	Sequence 1547	V41696
Sequence 1496	M80536	Sequence 1548	U42404
Sequence 1497	D38145	Sequence 1549	M61916
Sequence 1498	AL110235	Sequence 1550	X15880
Sequence 1499	AL117237	Sequence 1551	V59659
Sequence 1500	AA381956	Sequence 1552	AA324570
Sequence 1501	AC006145	Sequence 1553	D67031
Sequence 1502	X04409	Sequence 1554	M22920
Sequence 1503	X91648	Sequence 1555	U09410
Sequence 1504	L13923	Sequence 1556	AB020720
Sequence 1505	U61084	Sequence 1557	U02538
Sequence 1506	AA748038	Sequence 1558	AA417995
Sequence 1507	AF127918	Sequence 1559	AA740996

TABLE 8

Sequence 1560	AB009356	Sequence 1612	AL080209
Sequence 1561	AA310377	Sequence 1613	J05243
Sequence 1562	U35116	Sequence 1614	AF100759
Sequence 1563	AI637855	Sequence 1615	X07240
Sequence 1564	U31657	Sequence 1616	M16447
Sequence 1565	H18732	Sequence 1617	M64098
Sequence 1566	X15729	Sequence 1618	M34225
Sequence 1567	AF094517	Sequence 1619	T37413
Sequence 1568	AA024968	Sequence 1620	AF003594
Sequence 1569	K00558	Sequence 1621	M17017
Sequence 1570	AI433228	Sequence 1622	AL022722
Sequence 1571	AF085355	Sequence 1623	K01228
Sequence 1572	AA506299	Sequence 1624	X68277
Sequence 1573	AA708099	Sequence 1625	AB000220
Sequence 1574	AI263191	Sequence 1626	L32179
Sequence 1575	AA181830	Sequence 1627	M24486
Sequence 1576	W04892	Sequence 1628	AB016823
Sequence 1577	U14971	Sequence 1629	U14750
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Sequence 1579	AA053528	Sequence 1631	AJ000519
Sequence 1580	X79535	Sequence 1632	AL117489
Sequence 1581	M13918	Sequence 1633	M15841
Sequence 1582	AI160817	Sequence 1634	X53051
Sequence 1583	AI676202	Sequence 1635	AB030656
Sequence 1584	AA557175	Sequence 1636	AF035289
Sequence 1585	AF141347	Sequence 1637	M77025
Sequence 1586	U14969	Sequence 1638	AB007957
Sequence 1587	L06237	Sequence 1639	AF035313
Sequence 1588	Q90112	Sequence 1640	AF006082
Sequence 1589	D83243	Sequence 1641	U37547
Sequence 1590	I34433	Sequence 1642	V26608
Sequence 1591	M20681	Sequence 1643	D00422
Sequence 1592	M17733	Sequence 1644	V88961
Sequence 1593	AF131856	Sequence 1645	J03518
Sequence 1594	AL080131	Sequence 1646	Y09443
Sequence 1595	T37412	Sequence 1647	AL110126
Sequence 1596	G06425	Sequence 1648	M13656
Sequence 1597	J03934	Sequence 1649	AF132950
Sequence 1598	M16342	Sequence 1650	AF068651
Sequence 1599	M34064	Sequence 1651	M84810
Sequence 1600	AF048755	Sequence 1652	AF052179
Sequence 1601	AF056433	Sequence 1653	AJ246000
Sequence 1602	M30773	Sequence 1654	AA074819
Sequence 1603	E03157	Sequence 1655	AL022578
Sequence 1604	X65965	Sequence 1656	D16937
Sequence 1605	U30255	Sequence 1657	X01924
Sequence 1606	U90441	Sequence 1658	L25085
Sequence 1607	U81234	Sequence 1659	L13806
Sequence 1608	AB016517	Sequence 1660	Q48043
Sequence 1609	U85044	Sequence 1661	S78694
Sequence 1610	AL096714	Sequence 1662	AF063658
Sequence 1611	Y00282	Sequence 1663	D13119

TABLE 8

Sequence 1664	AA631152	Sequence 1716	J02770
Sequence 1665	Y09188	Sequence 1717	AA197063
Sequence 1666	M28203	Sequence 1718	AA421682
Sequence 1667	V84465	Sequence 1719	AA313715
Sequence 1668	M75126	Sequence 1720	AA057756
Sequence 1669	J05192	Sequence 1721	AI278640
Sequence 1670	M55618	Sequence 1722	AA147037
Sequence 1671	AB028950	Sequence 1723	M27319
Sequence 1672	X81198	Sequence 1724	U02680
Sequence 1673	U12465	Sequence 1725	R73924
Sequence 1674	AF021336	Sequence 1726	AF031647
Sequence 1675	U61734	Sequence 1727	AI910477
Sequence 1676	AF110647	Sequence 1728	AA131746
Sequence 1677	X76538	Sequence 1729	AA131834
Sequence 1678	AF023244	Sequence 1730	M60459
Sequence 1679	U14394	Sequence 1731	AA373516
Sequence 1680	J04088	Sequence 1732	AB002364
Sequence 1681	AL117450	Sequence 1733	D43682
Sequence 1682	L40391	Sequence 1734	L06328
Sequence 1683	M27445	Sequence 1735	M14083
Sequence 1684	AF088029	Sequence 1736	M32304
Sequence 1685	E02205	Sequence 1737	AL049963
Sequence 1686	AB003698	Sequence 1738	AB020685
Sequence 1687	X63556	Sequence 1739	R69515
Sequence 1688	X37385	Sequence 1740	G23918
Sequence 1689	AB007939	Sequence 1741	AL049367
Sequence 1690	J03537	Sequence 1742	D26181
Sequence 1691	AL050265	Sequence 1743	U73824
Sequence 1692	S75725	Sequence 1744	U18009
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Sequence 1697	AI570884	Sequence 1749	AL031255
Sequence 1698	U07151	Sequence 1750	AF000652
Sequence 1699	E01650	Sequence 1751	AB005047
Sequence 1700	AF000231	Sequence 1752	AL050011
Sequence 1701	AL035291	Sequence 1753	X85011
Sequence 1702	AF074000	Sequence 1754	U47926
Sequence 1703	U96750	Sequence 1755	AL117448
Sequence 1704	AF032885	Sequence 1756	X07428
Sequence 1705	AA281135	Sequence 1757	AA752779
Sequence 1706	AA381189	Sequence 1758	AF039945
Sequence 1707	AA393695	Sequence 1759	G37031
Sequence 1708	D89937	Sequence 1760	AL050228
Sequence 1709	AB007960	Sequence 1761	AI404883
Sequence 1710	L12168	Sequence 1762	V62751
Sequence 1711	AF047470	Sequence 1763	AA931890
Sequence 1712	U07819	Sequence 1764	M33146
Sequence 1713	AF117949	Sequence 1765	AB029014
Sequence 1714	AA082386	Sequence 1766	D87367
Sequence 1715	AA147887	Sequence 1767	AF098951

TABLE 8

Sequence 1768: found in patent publication WO99/36550

CGAATTGGAGCTCCCCGCGGTGGCGGCCGCCGGGCAGGTAAGGGAATGACGGTGGGA
AATNAACAACACGGATGCCGAGGGCAGGCTGGTGCTGGCAGATGGCGTGTCTATGCTTG
CAAGGACCTGGGGGCCGACATCATCTGGACATGGCCACCCTGACCGGGGCTCAGGGCAT
TGCCACAGGGAAGTACCT

Sequence 1769: found in patent publication WO99/24836

AGGTTCTAAATACTAATTAAGNGGCTTTCATAATATGTAACCTTTGGGTTCTGCCTTTT
TCAGAAAATGGAAACTTGGGCCATGTGTATTTCAAACAAAAATAACTTTAGATATATCTT
TTTTGTAGCTTTGATTGATGCTCTAAGATCACATGAGGGTAGTATTTAATATATTAGATG
AAGGACAACCTTTGGACATAACACTGACTAGGAGTTGAGAGCTTTTGCATCAGGCAGAAGC
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TTCAGTTTTATGAATTTTT

Sequence 1770: found in patent publication WO99/18126

GCGAATTGGAGCTCCCCGCGGTGGCGGCCGNGGTACCCAATATAAGGAATATCACTTTT
NGTAACAATCAAGAAAATTCTGGAAATGTATGTAATATTTGGGTTGCTGAATGAAGATAT
AGGACTTTATGGATTGATTGTTAATTTAACTGTTAGGACGATATATTTTCTGTTTTAT
TTTAAGGAAGAGCAAAGCTGTCAAATAAGCTACTATATCAGAAGGGACATAAACTGAACT
AGTGCCATTCTGACACACAGGATCAGAAACTCCTAAAATCACATATTCCTGAATACTGCT
ATCAGCAATACCACTGAGACTGATTCACTGCTATGTTATGGTGATGATTGACATGATCC
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ACTTGTTGTAAGATGAACCAAGGTAGAGATGATTGT

Sequence 1771: found in patent publication WO99/14328

CCGCGGTGGCGGCCGAGGTAAGTGTATGGGGGCTTTGGCTACCTGTTGTACGGAGTCTC
CTGCTTCGTCTGCGGCCACATCTGGATGGCTGCCGAGGAGACATTCTCAGTGCCCGTCTC
GACGAGTGGCTTGGACGCTGCCCTCATTGACTCTCTGGGCGTGGCTGTGTCTCACAGCAC
CAGGGGCAGCAGTATCGCTCATTTGAAGTGGCCAAAAATAGGGACCTGAGAAGGAAGGG
AGCTCGGCTTTCCTGAGTGCCTTCGCCGTGCACCCTGTCTCCGAAGGTACCTGCCCG

Sequence 1772: found in patent publication WO98/54963

TTAGGGCGAATTGGAGCTCCCCGCGGTGGCGGCCGCCGGCAGGTTTTTTTTTTTTTTTT
TT

Sequence 1773: found in patent publication WO98/39448

AGGTACATCTCACTNGTATAATTATATGTAGCACTGTGCTGTGTAGATAGTTCCTACTGG
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CCAAATCCCAATTTTTTTTGGTCTTTTATAGGAAAGATTGTTGTGGTAAAAAGTGTTAGT
ATAAAAAATGATAATTTACTTGTAGTCTTTTATGATTACACCAATGTATTCTAGAAATAGT
TATGTCTTAGGAAATTTGGTTTAAATTTTACTTTTACAGGTAAGTGCAAAGGAGAAGT
GGTTTCATGAAATGTTCTAATGTATAATAACATTTACCTTCAG

TABLE 8

Sequence 1774	M18728	Sequence 1826	E01972
Sequence 1775	AJ010442	Sequence 1827	AA171713
Sequence 1776	AI253436	Sequence 1828	AC007878
Sequence 1777	AA190630	Sequence 1829	AA394002
Sequence 1778	AI699217	Sequence 1830	AA004723
Sequence 1779	AA927862	Sequence 1831	AA602794
Sequence 1780	AA779949	Sequence 1832	AA781389
Sequence 1781	H25211	Sequence 1833	M13519
Sequence 1782	AF042081	Sequence 1834	AA298145
Sequence 1783	X59407	Sequence 1835	AL037114
Sequence 1784	L15203	Sequence 1836	H66467
Sequence 1785	AA157674	Sequence 1837	AF016270
Sequence 1786	AF077202	Sequence 1838	AA337022
Sequence 1787	M16660	Sequence 1839	AA460260
Sequence 1788	S74681	Sequence 1840	AA165164
Sequence 1789	AA294850	Sequence 1841	AA316867
Sequence 1790	M10119	Sequence 1842	AF151884
Sequence 1791	X59406	Sequence 1843	AF100756
Sequence 1792	AA476703	Sequence 1844	AA284584
Sequence 1793	Y00282	Sequence 1845	AA083794
Sequence 1794	U82258	Sequence 1846	AF078855
Sequence 1795	AF054284	Sequence 1847	Z68953
Sequence 1796	Y09188	Sequence 1848	J03191
Sequence 1797	AL035304	Sequence 1849	L13210
Sequence 1798	AA525178	Sequence 1850	Y13247
Sequence 1799	AF061738	Sequence 1851	AI708903
Sequence 1800	X04409	Sequence 1852	AA505133
Sequence 1801	T91165	Sequence 1853	D26600
Sequence 1802	AA772173	Sequence 1854	D45887
Sequence 1803	X70421	Sequence 1855	AC005224
Sequence 1804	AA176438	Sequence 1856	M30608
Sequence 1805	AA832226	Sequence 1857	U07151
Sequence 1806	Y18007	Sequence 1858	T67129
Sequence 1807	AB022653	Sequence 1859	AF147330
Sequence 1808	AA284420	Sequence 1860	AF095448
Sequence 1809	AF147331	Sequence 1861	U33821
Sequence 1810	AA301824	Sequence 1862	AF028832
Sequence 1811	AA042845	Sequence 1863	M73547
Sequence 1812	AI417973	Sequence 1864	AF106622
Sequence 1813	X58086	Sequence 1865	AF150959
Sequence 1814	AL110185	Sequence 1866	AI307557
Sequence 1815	X05606	Sequence 1867	AI791322
Sequence 1816	X13923	Sequence 1868	AA558436
Sequence 1817	AA506767	Sequence 1869	R32007
Sequence 1818	L40679	Sequence 1870	AA369238
Sequence 1819	AA325220	Sequence 1871	AA410496
Sequence 1820	AA188582	Sequence 1872	AL050141
Sequence 1821	AF070669	Sequence 1873	AI952819
Sequence 1822	AA948196	Sequence 1874	AA258568
Sequence 1823	AI458391	Sequence 1875	AA747415
Sequence 1824	AA814725	Sequence 1876	J03241
Sequence 1825	AF065388	Sequence 1877	AB022656

TABLE 8

Sequence 1878	M22918	Sequence 1930	X56998
Sequence 1879	L08044	Sequence 1931	AI807806
Sequence 1880	D14710	Sequence 1932	AA318678
Sequence 1881	X81696	Sequence 1933	D87742
Sequence 1882	H39934	Sequence 1934	AF007791
Sequence 1883	AI200949	Sequence 1935	M24486
Sequence 1884	W01897	Sequence 1936	U44772
Sequence 1885	AJ231669	Sequence 1937	AA156971
Sequence 1886	AI767622	Sequence 1938	AI499245
Sequence 1887	AL036003	Sequence 1939	X03069
Sequence 1888	S57235	Sequence 1940	AA720716
Sequence 1889	AI753817	Sequence 1941	AA035773
Sequence 1890	AF061736	Sequence 1942	U09820
Sequence 1891	Z30567	Sequence 1943	AA377319
Sequence 1892	AF071593	Sequence 1944	M84443
Sequence 1893	T94936	Sequence 1945	W07114
Sequence 1894	AA042879	Sequence 1946	R14392
Sequence 1895	Q51548	Sequence 1947	AA188097
Sequence 1896	R83590	Sequence 1948	AA302288
Sequence 1897	L03162	Sequence 1949	C17096
Sequence 1898	U26032	Sequence 1950	AF026927
Sequence 1899	U70322	Sequence 1951	AA713638
Sequence 1900	AF053641	Sequence 1952	M64572
Sequence 1901	AA670403	Sequence 1953	AI185700
Sequence 1902	AA635411	Sequence 1954	H80042
Sequence 1903	Q44223	Sequence 1955	L20688
Sequence 1904	AA010893	Sequence 1956	AL050136
Sequence 1905	X55122	Sequence 1957	D38293
Sequence 1906	AA100138	Sequence 1958	J02642
Sequence 1907	A26481	Sequence 1959	AF103427
Sequence 1908	R15890	Sequence 1960	X06617
Sequence 1909	AA021041	Sequence 1961	AI453405
Sequence 1910	AI001741	Sequence 1962	Q44222
Sequence 1911	AA886805	Sequence 1963	M58285
Sequence 1912	AA480231	Sequence 1964	X59543
Sequence 1913	D89675	Sequence 1965	R69532
Sequence 1914	AI671968	Sequence 1966	X81695
Sequence 1915	AI127556	Sequence 1967	AA553788
Sequence 1916	Y17957	Sequence 1968	AF064092
Sequence 1917	AF047435	Sequence 1969	U15782
Sequence 1918	AF103560	Sequence 1970	U29615
Sequence 1919	AA911387	Sequence 1971	L29157
Sequence 1920	AI127076	Sequence 1972	X85372
Sequence 1921	M69106	Sequence 1973	AA854215
Sequence 1922	AF054990	Sequence 1974	AI765009
Sequence 1923	AI417239	Sequence 1975	AA295258
Sequence 1924	AA455793	Sequence 1976	AF025439
Sequence 1925	X13238	Sequence 1977	W26884
Sequence 1926	D55654	Sequence 1978	Z68942
Sequence 1927	AF132856	Sequence 1979	U66615
Sequence 1928	U15008	Sequence 1980	AA731897
Sequence 1929	AA689307	Sequence 1981	M65209

TABLE 8

Sequence 1982	AA095108	Sequence 2034	AA552321
Sequence 1983	E08293	Sequence 2035	N64214
Sequence 1984	AA223749	Sequence 2036	AI051382
Sequence 1985	AI245729	Sequence 2037	T36078
Sequence 1986	AI281652	Sequence 2038	V86720
Sequence 1987	U09284	Sequence 2039	AA295093
Sequence 1988	AA593651	Sequence 2040	AI820678
Sequence 1989	D17268	Sequence 2041	AA477064
Sequence 1990	L33930	Sequence 2042	X32826
Sequence 1991	D50525	Sequence 2043	AA743959
Sequence 1992	AA282664	Sequence 2044	AA100084
Sequence 1993	E02628	Sequence 2045	AA025072
Sequence 1994	AA806798	Sequence 2046	AL038975
Sequence 1995	AA308062	Sequence 2047	AI279456
Sequence 1996	AA435917	Sequence 2048	D80000
Sequence 1997	AA321244	Sequence 2049	AA429420
Sequence 1998	U28811	Sequence 2050	X02486
Sequence 1999	L29162	Sequence 2051	AF067516
Sequence 2000	AA649195	Sequence 2052	Y11898
Sequence 2001	T44091	Sequence 2053	AA864239
Sequence 2002	Z30570	Sequence 2054	AA976744
Sequence 2003	AA430565	Sequence 2055	X65287
Sequence 2004	AA009707	Sequence 2056	AI815966
Sequence 2005	AF077034	Sequence 2057	AA075172
Sequence 2006	AA292993	Sequence 2058	AA411686
Sequence 2007	AA297402	Sequence 2059	AA229021
Sequence 2008	U88666	Sequence 2060	AI253379
Sequence 2009	D86974	Sequence 2061	AI969567
Sequence 2010	AI208741	Sequence 2062	AA092416
Sequence 2011	X04098	Sequence 2063	AA081219
Sequence 2012	AF047473	Sequence 2064	AA345772
Sequence 2013	AA206085	Sequence 2065	AA295982
Sequence 2014	Q13352	Sequence 2066	X06272
Sequence 2015	AA314671	Sequence 2067	AA400402
Sequence 2016	AA354020	Sequence 2068	AI198879
Sequence 2017	AF045167	Sequence 2069	J03607
Sequence 2018	AB004848	Sequence 2070	AA296279
Sequence 2019	H16051	Sequence 2071	AF018631
Sequence 2020	AI653541	Sequence 2072	AA305200
Sequence 2021	AA307779	Sequence 2073	AA436767
Sequence 2022	AA081760	Sequence 2074	U03274
Sequence 2023	AL031680	Sequence 2075	AF144713
Sequence 2024	R79907	Sequence 2076	AA490523
Sequence 2025	U37230	Sequence 2077	H44507
Sequence 2026	M90809	Sequence 2078	AR019380
Sequence 2027	AF063737	Sequence 2079	AI066510
Sequence 2028	X62534	Sequence 2080	X57811
Sequence 2029	AF043977	Sequence 2081	AA088373
Sequence 2030	V00599	Sequence 2082	G39694
Sequence 2031	H20652	Sequence 2083	W21233
Sequence 2032	U03897	Sequence 2084	AB002330
Sequence 2033	AF015812	Sequence 2085	D87078

TABLE 8

Sequence 2086	E08294	Sequence 2138	AA128111
Sequence 2087	AF055014	Sequence 2139	AA773032
Sequence 2088	AI124281	Sequence 2140	AL037498
Sequence 2089	AA705813	Sequence 2141	AF063527
Sequence 2090	AA632134	Sequence 2142	AA398560
Sequence 2091	AA125759	Sequence 2143	AA352349
Sequence 2092	AB018346	Sequence 2144	AA196117
Sequence 2093	AF099149	Sequence 2145	G06380
Sequence 2094	L26260	Sequence 2146	AF061926
Sequence 2095	AA147826	Sequence 2147	AI499129
Sequence 2096	AA464224	Sequence 2148	AA495923
Sequence 2097	AF086234	Sequence 2149	AA026387
Sequence 2098	AA442227	Sequence 2150	AA618051
Sequence 2099	AA291316	Sequence 2151	T70731
Sequence 2100	W79315	Sequence 2152	AF038963
Sequence 2101	AF022778	Sequence 2153	AA022937
Sequence 2102	AC007684	Sequence 2154	Y07968
Sequence 2103	AA362984	Sequence 2155	AB012910
Sequence 2104	J04088	Sequence 2156	AA360223
Sequence 2105	AA569809	Sequence 2157	AA413841
Sequence 2106	U41060	Sequence 2158	AA192541
Sequence 2107	AI273048	Sequence 2159	AA361678
Sequence 2108	D55577	Sequence 2160	AA314773
Sequence 2109	AI752834	Sequence 2161	AA186564
Sequence 2110	AA766254	Sequence 2162	M94046
Sequence 2111	Z85547	Sequence 2163	AA187068
Sequence 2112	AI123472	Sequence 2164	AA831802
Sequence 2113	AJ004955	Sequence 2165	AL038801
Sequence 2114	M12938	Sequence 2166	X91257
Sequence 2115	D00760	Sequence 2167	AL045770
Sequence 2116	X67951	Sequence 2168	AI364236
Sequence 2117	AL049404	Sequence 2169	AR016261
Sequence 2118	AI633000	Sequence 2170	AA922580
Sequence 2119	AA506763	Sequence 2171	K03020
Sequence 2120	AF044956	Sequence 2172	AA582093
Sequence 2121	G39296	Sequence 2173	D11960
Sequence 2122	AA181133	Sequence 2174	AF060228
Sequence 2123	U90916	Sequence 2175	AA333358
Sequence 2124	AI360559	Sequence 2176	J03460
Sequence 2125	AA244207	Sequence 2177	AA482641
Sequence 2126	AF047181	Sequence 2178	D88674
Sequence 2127	AA772279	Sequence 2179	AI298300
Sequence 2128	AF159567	Sequence 2180	X59405
Sequence 2129	AA044977	Sequence 2181	AJ242567
Sequence 2130	AA192135	Sequence 2182	U07429
Sequence 2131	AA738004	Sequence 2183	AA554735
Sequence 2132	U12465	Sequence 2184	AL110297
Sequence 2133	AA596080	Sequence 2185	Z48501
Sequence 2134	X57398	Sequence 2186	AA682861
Sequence 2135	AA327546	Sequence 2187	V00528
Sequence 2136	AF052578	Sequence 2188	AI382239
Sequence 2137	AA405415	Sequence 2189	U07516

TABLE 8

Sequenc 2190	X40372	Sequence 2242	AF151803
Sequence 2191	L22157	Sequence 2243	AL048707
Sequence 2192	N36740	Sequence 2244	AB011088
Sequence 2193	Z30564	Sequence 2245	W00352
Sequence 2194	Q20067	Sequence 2246	AF153608
Sequence 2195	U07443	Sequence 2247	AA725071
Sequence 2196	AF047436	Sequence 2248	U07446
Sequence 2197	U69668	Sequence 2249	AA316441
Sequence 2198	AI435293	Sequence 2250	AA441787
Sequence 2199	AB003698	Sequence 2251	M22590
Sequence 2200	AB004066	Sequence 2252	AI462432
Sequence 2201	AA505632	Sequence 2253	AA528108
Sequence 2202	Y14737	Sequence 2254	AI499106
Sequence 2203	AA581946	Sequence 2255	H71830
Sequence 2204	X87949	Sequence 2256	I07074
Sequence 2205	AA250737	Sequence 2257	M26880
Sequence 2206	AA644593	Sequence 2258	AA029874
Sequence 2207	AI655499	Sequence 2259	AF113887
Sequence 2208	AI814989	Sequence 2260	AI139489
Sequence 2209	R89882	Sequence 2261	N59240
Sequence 2210	AL110241	Sequence 2262	AA522684
Sequence 2211	AA535724	Sequence 2263	AA226408
Sequence 2212	J04162	Sequence 2264	AI828610
Sequence 2213	AI751428	Sequence 2265	X59417
Sequence 2214	AA360963	Sequence 2266	T90236
Sequence 2215	X95750	Sequence 2267	V18674
Sequence 2216	U79282	Sequence 2268	AA054686
Sequence 2217	AI955208	Sequence 2269	R64693
Sequence 2218	AF069904	Sequence 2270	AA147802
Sequence 2219	AA295941	Sequence 2271	X72453
Sequence 2220	AA381553	Sequence 2272	AA516036
Sequence 2221	AJ388666	Sequence 2273	AA081286
Sequence 2222	AA291205	Sequence 2274	AA608538
Sequence 2223	X95747	Sequence 2275	AI217021
Sequence 2224	M17886	Sequence 2276	AA078786
Sequence 2225	AI609966	Sequence 2277	AA099976
Sequence 2226	AI891157	Sequence 2278	F18794
Sequence 2227	AA985283	Sequence 2279	U96915
Sequence 2228	L40648	Sequence 2280	AI525843
Sequence 2229	U07433	Sequence 2281	AA579974
Sequence 2230	AA613300	Sequence 2282	W25389
Sequence 2231	AA091275	Sequence 2283	U07530
Sequence 2232	AA641422	Sequence 2284	AI188159
Sequence 2233	J00196	Sequence 2285	R79141
Sequence 2234	AF103467	Sequence 2286	AA720767
Sequence 2235	AA484104	Sequence 2287	AA247391
Sequence 2236	AJ231676	Sequence 2288	AA532852
Sequence 2237	H08511	Sequence 2289	AA292047
Sequence 2238	AC004055	Sequence 2290	H52045
Sequence 2239	D13665	Sequence 2291	H70726
Sequence 2240	AA713702	Sequence 2292	X64132
Sequence 2241	A16794	Sequence 2293	AI027922

TABLE 8

Sequence 2294	F24320	Sequence 2346	J03799
Sequence 2295	Z82141	Sequence 2347	AA179000
Sequence 2296	AU067004	Sequence 2348	AF091084
Sequence 2297	D00068	Sequence 2349	AI963511
Sequence 2298	AI688098	Sequence 2350	F15551
Sequence 2299	AI004915	Sequence 2351	AA513640
Sequence 2300	W26477	Sequence 2352	X51669
Sequence 2301	AA017582	Sequence 2353	AA464136
Sequence 2302	AA713551	Sequence 2354	AA300745
Sequence 2303	T63701	Sequence 2355	M55542
Sequence 2304	L29222	Sequence 2356	Z85580
Sequence 2305	U90549	Sequence 2357	D87449
Sequence 2306	AA482212	Sequence 2358	AI081976
Sequence 2307	AF103393	Sequence 2359	Z82156
Sequence 2308	R70290	Sequence 2360	U07528
Sequence 2309	AA464647	Sequence 2361	AI248817
Sequence 2310	U51478	Sequence 2362	AA700905
Sequence 2311	AI124316	Sequence 2363	AI950360
Sequence 2312	AA541398	Sequence 2364	AF015926
Sequence 2313	AB020868	Sequence 2365	U17496
Sequence 2314	AA614803	Sequence 2366	AA488211
Sequence 2315	AA082523	Sequence 2367	AA173402
Sequence 2316	AA127733	Sequence 2368	AI203143
Sequence 2317	AA976403	Sequence 2369	AL039323
Sequence 2318	X98263	Sequence 2370	AA721589
Sequence 2319	AB018297	Sequence 2371	V88876
Sequence 2320	R45926	Sequence 2372	AA558976
Sequence 2321	AF086450	Sequence 2373	L10612
Sequence 2322	AA629242	Sequence 2374	AL036650
Sequence 2323	AB011158	Sequence 2375	AA374020
Sequence 2324	AF052532	Sequence 2376	AA113151
Sequence 2325	AA256814	Sequence 2377	AL080136
Sequence 2326	AA364604	Sequence 2378	AA362095
Sequence 2327	AL039100	Sequence 2379	AA713535
Sequence 2328	AA961797	Sequence 2380	AA449878
Sequence 2329	AA135698	Sequence 2381	U42594
Sequence 2330	AA300651	Sequence 2382	AI080359
Sequence 2331	L37311	Sequence 2383	X02530
Sequence 2332	AI565889	Sequence 2384	R36562
Sequence 2333	AA781971	Sequence 2385	AA303354
Sequence 2334	AF027159	Sequence 2386	U36336
Sequence 2335	M10940	Sequence 2387	AC004084
Sequence 2336	AF151878	Sequence 2388	AA737772
Sequence 2337	AA442385	Sequence 2389	AA403087
Sequence 2338	AI732534	Sequence 2390	AA725267
Sequence 2339	S50732	Sequence 2391	AA301032
Sequence 2340	AA128659	Sequence 2392	S65879
Sequence 2341	AI719101	Sequence 2393	AA563865
Sequence 2342	AI220096	Sequence 2394	AA021135
Sequence 2343	D13866	Sequence 2395	AA603150
Sequence 2344	AA112749	Sequence 2396	AA015682
Sequence 2345	AA114940	Sequence 2397	AA293287

TABLE 8

Sequence 2398	AA295311	Sequence 2450	AA484752
Sequence 2399	AF035287	Sequence 2451	AU069002
Sequence 2400	AA381317	Sequence 2452	D15657
Sequence 2401	AI290826	Sequence 2453	U07510
Sequence 2402	AF131856	Sequence 2454	AI262029
Sequence 2403	M77693	Sequence 2455	AF086522
Sequence 2404	AA190353	Sequence 2456	L37303
Sequence 2405	H07011	Sequence 2457	AA236638
Sequence 2406	X81109	Sequence 2458	F19095
Sequence 2407	AA205004	Sequence 2459	AA327357
Sequence 2408	AF103150	Sequence 2460	AI631745
Sequence 2409	Z45495	Sequence 2461	AI708983
Sequence 2410	X72815	Sequence 2462	H53479
Sequence 2411	N81637	Sequence 2463	AR051554
Sequence 2412	AJ010444	Sequence 2464	AI770054
Sequence 2413	AI016773	Sequence 2465	AT000865
Sequence 2414	AA302623	Sequence 2466	AA689441
Sequence 2415	AI557284	Sequence 2467	E02904
Sequence 2416	AB004304	Sequence 2468	AI609630
Sequence 2417	AA143149	Sequence 2469	AA932357
Sequence 2418	AA309058	Sequence 2470	AA315413
Sequence 2419	AA923061	Sequence 2471	AF026381
Sequence 2420	AA307247	Sequence 2472	X12660
Sequence 2421	AA361821	Sequence 2473	D13286
Sequence 2422	AA836318	Sequence 2474	D87667
Sequence 2423	AI312963	Sequence 2475	AA311825
Sequence 2424	E06721	Sequence 2476	AA316964
Sequence 2425	AI123453	Sequence 2477	AI189386
Sequence 2426	AA375003	Sequence 2478	AA404511
Sequence 2427	AA687216	Sequence 2479	AI201272
Sequence 2428	R12199	Sequence 2480	H44273
Sequence 2429	AA287796	Sequence 2481	AA165628
Sequence 2430	L15702	Sequence 2482	AI340262
Sequence 2431	AA315188	Sequence 2483	AA295348
Sequence 2432	U07430	Sequence 2484	U09564
Sequence 2433	X12763	Sequence 2485	AL050025
Sequence 2434	AA329485	Sequence 2486	T98193
Sequence 2435	X63432	Sequence 2487	J00231
Sequence 2436	AF103460	Sequence 2488	AA545790
Sequence 2437	AA375844	Sequence 2489	AA704996
Sequence 2438	AA167761	Sequence 2490	AI017442
Sequence 2439	AA713725	Sequence 2491	AA071447
Sequence 2440	Z26603	Sequence 2492	T99386
Sequence 2441	AA095651	Sequence 2493	AA341801
Sequence 2442	AL117237	Sequence 2494	AF044588
Sequence 2443	Z47727	Sequence 2495	AU001787
Sequence 2444	N28493	Sequence 2496	R41285
Sequence 2445	U14967	Sequence 2497	AI879248
Sequence 2446	AA314663	Sequence 2498	M13755
Sequence 2447	D31885	Sequence 2499	H27048
Sequence 2448	L36151	Sequence 2500	AA463964
Sequence 2449	AA942898	Sequence 2501	L03152

TABLE 8

Sequence 2502	AF152961	Sequence 2554	AI540174
Sequence 2503	AA228662	Sequence 2555	AF038452
Sequence 2504	U07465	Sequence 2556	AL031592
Sequence 2505	AA464313	Sequence 2557	AI423541
Sequence 2506	AI738507	Sequence 2558	AA910116
Sequence 2507	AA223779	Sequence 2559	Z11890
Sequence 2508	AA318591	Sequence 2560	AA105111
Sequence 2509	AB022654	Sequence 2561	M60854
Sequence 2510	AA468787	Sequence 2562	AF131857
Sequence 2511	AI344026	Sequence 2563	M17885
Sequence 2512	U62136	Sequence 2564	T29104
Sequence 2513	Q11879	Sequence 2565	X58082
Sequence 2514	AA455803	Sequence 2566	U24105
Sequence 2515	L03166	Sequence 2567	AF054183
Sequence 2516	W67625	Sequence 2568	L26247
Sequence 2517	AA234225	Sequence 2569	L33042
Sequence 2518	AI370191	Sequence 2570	AF151885
Sequence 2519	AA165165	Sequence 2571	AA306892
Sequence 2520	AF070655	Sequence 2572	AB015317
Sequence 2521	D87666	Sequence 2573	W02418
Sequence 2522	AF124726	Sequence 2574	AI032164
Sequence 2523	AA230271	Sequence 2575	AA703549
Sequence 2524	D16838	Sequence 2576	AI720459
Sequence 2525	AI635070	Sequence 2577	AI250317
Sequence 2526	AP000462	Sequence 2578	AL080206
Sequence 2527	AF041432	Sequence 2579	J03473
Sequence 2528	AL045838	Sequence 2580	AF062323
Sequence 2529	AA345486	Sequence 2581	AI925203
Sequence 2530	AA240797	Sequence 2582	G34917
Sequence 2531	AA136791	Sequence 2583	AF132965
Sequence 2532	H43367	Sequence 2584	Y10179
Sequence 2533	AL037679	Sequence 2585	U27900
Sequence 2534	Z11894	Sequence 2586	F18867
Sequence 2535	AA244241	Sequence 2587	M19308
Sequence 2536	AA587371	Sequence 2588	AA237398
Sequence 2537	H26913	Sequence 2589	T59533
Sequence 2538	M81057	Sequence 2590	S78271
Sequence 2539	AJ007398	Sequence 2591	AJ000334
Sequence 2540	V00518	Sequence 2592	AA386011
Sequence 2541	AI245807	Sequence 2593	AF151861
Sequence 2542	L38486	Sequence 2594	AF038954
Sequence 2543	X73459	Sequence 2595	AI204592
Sequence 2544	AF103468	Sequence 2596	S82616
Sequence 2545	AF011468	Sequence 2597	AL110100
Sequence 2546	AF041483	Sequence 2598	AA502178
Sequence 2547	AL050286	Sequence 2599	M55047
Sequence 2548	AF092499	Sequence 2600	AF079363
Sequence 2549	AI148251	Sequence 2601	AA307397
Sequence 2550	I08142	Sequence 2602	M87790
Sequence 2551	AA075179	Sequence 2603	AI815498
Sequence 2552	D16480	Sequence 2604	X58072
Sequence 2553	L06132	Sequence 2605	R29275

TABLE 8

Sequence 2606	AA639707	Sequence 2658	AA021457
Sequence 2607	AA102421	Sequence 2659	AA451629
Sequence 2608	Q40768	Sequence 2660	Y00503
Sequence 2609	E03413	Sequence 2661	AI630567
Sequence 2610	AA595559	Sequence 2662	E01971
Sequence 2611	AA113357	Sequence 2663	X82200
Sequence 2612	AA346556	Sequence 2664	L40669
Sequence 2613	M83822	Sequence 2665	AF103548
Sequence 2614	X54942	Sequence 2666	AA580264
Sequence 2615	N24798	Sequence 2667	Z26605
Sequence 2616	AA308091	Sequence 2668	U72511
Sequence 2617	AC005412	Sequence 2669	AI631124
Sequence 2618	N92545	Sequence 2670	AL120972
Sequence 2619	AA587815	Sequence 2671	R91802
Sequence 2620	AI707551	Sequence 2672	U25789
Sequence 2621	L01413	Sequence 2673	Z20414
Sequence 2622	D17039	Sequence 2674	M63438
Sequence 2623	AI741718	Sequence 2675	AA807383
Sequence 2624	AA307513	Sequence 2676	AI267659
Sequence 2625	AF077045	Sequence 2677	T02921
Sequence 2626	T78825	Sequence 2678	AI684170
Sequence 2627	R69391	Sequence 2679	AA405397
Sequence 2628	AI253335	Sequence 2680	X65882
Sequence 2629	AA459984	Sequence 2681	AA558899
Sequence 2630	AI702073	Sequence 2682	AL037176
Sequence 2631	L07633	Sequence 2683	T72111
Sequence 2632	AA393828	Sequence 2684	M29469
Sequence 2633	AL035695	Sequence 2685	AF071219
Sequence 2634	D29013	Sequence 2686	Z70648
Sequence 2635	W00331	Sequence 2687	AA223226
Sequence 2636	AA420524	Sequence 2688	U44839
Sequence 2637	AL032644	Sequence 2689	L40739
Sequence 2638	AA581264	Sequence 2690	AB018334
Sequence 2639	AA304821	Sequence 2691	L40697
Sequence 2640	AL021938	Sequence 2692	AA464133
Sequence 2641	AI267502	Sequence 2693	AI613017
Sequence 2642	AI690835	Sequence 2694	AL039521
Sequence 2643	Z62968	Sequence 2695	AB028963
Sequence 2644	AL036165	Sequence 2696	AF067008
Sequence 2645	AA205854	Sequence 2697	L40646
Sequence 2646	AL118633	Sequence 2698	AA411702
Sequence 2647	AA960578	Sequence 2699	S72730
Sequence 2648	AA249553	Sequence 2700	AA318185
Sequence 2649	X89401	Sequence 2701	AA742768
Sequence 2650	AI499131	Sequence 2702	AF103469
Sequence 2651	AI304458	Sequence 2703	AL119232
Sequence 2652	AI661552	Sequence 2704	AA987234
Sequence 2653	AI591201	Sequence 2705	X41335
Sequence 2654	AW169132	Sequence 2706	AJ012409
Sequence 2655	AC006449	Sequence 2707	AA617926
Sequence 2656	AA448926	Sequence 2708	M87789
Sequence 2657	U87791	Sequence 2709	U09559

TABLE 8

Sequence 2710	D87444	Sequence 2762	U25789
Sequence 2711	AA152012	Sequence 2763	AF077034
Sequence 2712	R65657	Sequence 2764	U44772
Sequence 2713	H57093	Sequence 2765	X67951
Sequence 2714	AI970562	Sequence 2766	AF044588
Sequence 2715	AA037163	Sequence 2767	AB018334
Sequence 2716	L03146	Sequence 2768	X65882
Sequence 2717	L15189	Sequence 2769	M19308
Sequence 2718	AI339485	Sequence 2770	AF028832
Sequence 2719	AA740952	Sequence 2771	Z11890
Sequence 2720	AA009884	Sequence 2772	J04088
Sequence 2721	X63745	Sequence 2773	L07633
Sequence 2722	AA468276	Sequence 2774	AF086450
Sequence 2723	U67280	Sequence 2775	L03162
Sequence 2724	R83213	Sequence 2776	U14967
Sequence 2725	X15729	Sequence 2777	E01972
Sequence 2726	Z85780	Sequence 2778	U69668
Sequence 2727	AF070561	Sequence 2779	X91257
Sequence 2728	Q03638	Sequence 2780	S74681
Sequence 2729	AA664014	Sequence 2781	AF038452
Sequence 2730	AF100759	Sequence 2782	AF147331
Sequence 2731	L13385	Sequence 2783	AF027159
Sequence 2732	L01439	Sequence 2784	U09564
Sequence 2733	U82258	Sequence 2785	D55654
Sequence 2734	X81695	Sequence 2786	U88666
Sequence 2735	AF043977	Sequence 2787	Z26605
Sequence 2736	J00196	Sequence 2788	J04162
Sequence 2737	M10940	Sequence 2789	AF103469
Sequence 2738	AF062323	Sequence 2790	AL049404
Sequence 2739	AF077202	Sequence 2791	AF070561
Sequence 2740	M87789	Sequence 2792	AJ010444
Sequence 2741	AF047473	Sequence 2793	X55122
Sequence 2742	E08293	Sequence 2794	U07151
Sequence 2743	AL035304	Sequence 2795	L15203
Sequence 2744	AF061738	Sequence 2796	AF054990
Sequence 2745	AF091084	Sequence 2797	AL080136
Sequence 2746	Y17957	Sequence 2798	Z26603
Sequence 2747	Y00503	Sequence 2799	AF103150
Sequence 2748	L22157	Sequence 2800	AF079363
Sequence 2749	X58082	Sequence 2801	AF071219
Sequence 2750	X95750	Sequence 2802	X02530
Sequence 2751	Y18007	Sequence 2803	X13238
Sequence 2752	X59417	Sequence 2804	AJ010442
Sequence 2753	AJ007398	Sequence 2805	AB012910
Sequence 2754	AF103460	Sequence 2806	AB022653
Sequence 2755	AF100759	Sequence 2807	Z48501
Sequence 2756	U07528	Sequence 2808	X59405
Sequence 2757	AF026381	Sequence 2809	D88674
Sequence 2758	M55542	Sequence 2810	A26481
Sequence 2759	AJ004955	Sequence 2811	AB004304
Sequence 2760	U41060	Sequence 2812	AF070655
Sequence 2761	L40739	Sequence 2813	X73459

TABLE 8

Sequence 2814	Z30567	Sequence 2866	M12938
Sequence 2815	E03413	Sequence 2867	X98263
Sequence 2816	J03799	Sequence 2868	AF103548
Sequence 2817	Z11894	Sequence 2869	AF045167
Sequence 2818	M30608	Sequence 2870	AL110297
Sequence 2819	M18728	Sequence 2871	AL110241
Sequence 2820	Y14737	Sequence 2872	X59407
Sequence 2821	S82616	Sequence 2873	J03241
Sequence 2822	Y00282	Sequence 2874	X81696
Sequence 2823	AF103468	Sequence 2875	E08294
Sequence 2824	AF099149	Sequence 2876	AB022654
Sequence 2825	L26260	Sequence 2877	AB022656
Sequence 2826	AF054284	Sequence 2878	U07430
Sequence 2827	D13665	Sequence 2879	U07516
Sequence 2828	Y10179	Sequence 2880	X06617
Sequence 2829	X89401	Sequence 2881	M60854
Sequence 2830	U07443	Sequence 2882	V00518
Sequence 2831	E06721	Sequence 2883	AF060228
Sequence 2832	M29469	Sequence 2884	X58072
Sequence 2833	Z30564	Sequence 2885	D00760
Sequence 2834	U07465	Sequence 2886	X59406
Sequence 2835	X05606	Sequence 2887	AF061736
Sequence 2836	E02628	Sequence 2888	AA294850
Sequence 2837	L33042	Sequence 2889	F18794
Sequence 2838	L01413	Sequence 2890	AA327357
Sequence 2839	AF044956	Sequence 2891	H16051
Sequence 2840	AF042081	Sequence 2892	AI290826
Sequence 2841	M10119	Sequence 2893	AI127556
Sequence 2842	AF086234	Sequence 2894	AA296279
Sequence 2843	X13923	Sequence 2895	AA223779
Sequence 2844	Y09188	Sequence 2896	AL039100
Sequence 2845	M63438	Sequence 2897	AA781971
Sequence 2846	X95747	Sequence 2898	AA441787
Sequence 2847	D17039	Sequence 2899	AA301824
Sequence 2848	AF007791	Sequence 2900	AA333358
Sequence 2849	L15702	Sequence 2901	AI253335
Sequence 2850	AL110185	Sequence 2902	AA292047
Sequence 2851	U15008	Sequence 2903	AA464224
Sequence 2852	U09559	Sequence 2904	AI417973
Sequence 2853	X15729	Sequence 2905	AI767622
Sequence 2854	AF065388	Sequence 2906	AA327546
Sequence 2855	U26032	Sequence 2907	AA295941
Sequence 2856	L40648	Sequence 2908	AA295311
Sequence 2857	D50525	Sequence 2909	AA405397
Sequence 2858	AF095448	Sequence 2910	AA187068
Sequence 2859	S78271	Sequence 2911	R64693
Sequence 2860	X04098	Sequence 2912	AI751428
Sequence 2861	L29157	Sequence 2913	AA393828
Sequence 2862	Z30570	Sequence 2914	N36740
Sequence 2863	AF151803	Sequence 2915	AA314773
Sequence 2864	AB028963	Sequence 2916	AA321244
Sequence 2865	AF150959	Sequence 2917	AA831802

TABLE 8

Sequence 2918	AA410496	Sequence 2970	H44273
Sequence 2919	AA506767	Sequence 2971	AA429420
Sequence 2920	AI688098	Sequence 2972	AI458391
Sequence 2921	AA377319	Sequence 2973	AA099976
Sequence 2922	AA364604	Sequence 2974	AA250737
Sequence 2923	AA484752	Sequence 2975	AA360223
Sequence 2924	AA720767	Sequence 2976	AA318591
Sequence 2925	AA713725	Sequence 2977	AA400402
Sequence 2926	AA864239	Sequence 2978	AI217021
Sequence 2927	AI820678	Sequence 2979	AA287796
Sequence 2928	AA558976	Sequence 2980	AA165165
Sequence 2929	AI499106	Sequence 2981	AA135698
Sequence 2930	AA284584	Sequence 2982	W26477
Sequence 2931	AA293287	Sequence 2983	AA081760
Sequence 2932	R79141	Sequence 2984	AA779949
Sequence 2933	T67129	Sequence 2985	AA505632
Sequence 2934	AI635070	Sequence 2986	AA295093
Sequence 2935	AI245729	Sequence 2987	AA295348
Sequence 2936	AA398560	Sequence 2988	T94936
Sequence 2937	AA558436	Sequence 2989	AA580264
Sequence 2938	AA309058	Sequence 2990	AA179000
Sequence 2939	AA300745	Sequence 2991	AA413841
Sequence 2940	AA165164	Sequence 2992	AI770054
Sequence 2941	AA614803	Sequence 2993	AA341801
Sequence 2942	AI955208	Sequence 2994	T90236
Sequence 2943	H66467	Sequence 2995	R79907
Sequence 2944	AA430565	Sequence 2996	AA525178
Sequence 2945	AA464647	Sequence 2997	AI828610
Sequence 2946	AI791322	Sequence 2998	AA258568
Sequence 2947	AL118633	Sequence 2999	AA449878
Sequence 2948	AA291205	Sequence 3000	AA477064
Sequence 2949	AA337022	Sequence 3001	AI738507
Sequence 2950	AI204592	Sequence 3002	T91165
Sequence 2951	AI655499	Sequence 3003	Q51548
Sequence 2952	AA316867	Sequence 3004	Q11879
Sequence 2953	D15657	Sequence 3005	X32826
Sequence 2954	T72111	Sequence 3006	X40372
Sequence 2955	AA230271	Sequence 3007	T44091
Sequence 2956	AA306892	Sequence 3008	Z20414
Sequence 2957	R69532	Sequence 3009	Q44222
Sequence 2958	AA484104	Sequence 3010	Q44223
Sequence 2959	AA737772	Sequence 3011	Q40768
Sequence 2960	AA318185	Sequence 3012	T78825
Sequence 2961	AA442227	Sequence 3013	AF036241
Sequence 2962	AA629242	Sequence 3014	AL110197
Sequence 2963	AA535724	Sequence 3015	AB033033
Sequence 2964	AA747415	Sequence 3016	AF047473
Sequence 2965	AA292993	Sequence 3017	D82348
Sequence 2966	AI453405	Sequence 3018	U76638
Sequence 2967	AA297402	Sequence 3019	AF086336
Sequence 2968	W25389	Sequence 3020	J03464
Sequence 2969	AA381553	Sequence 3021	A26481

Sequence 3022 U60067
Sequence 3023 X15880
Sequence 3024 X55525
Sequence 3025 AJ243428
Sequence 3026 AJ249731
Sequence 3027 M87503
Sequence 3028 L20859
Sequence 3029 E01972
Sequence 3030 X04758
Sequence 3031 AF061736
Sequence 3032 AF091092
Sequence 3033 AB028991
Sequence 3034 AF070523
Sequence 3035 AB011145
Sequence 3036 AF049910
Sequence 3037 X56199
Sequence 3038 X13238
Sequence 3039 AF000152
Sequence 3040 AF141347
Sequence 3041 Z82022
Sequence 3042 AL050273
Sequence 3043 D79996
Sequence 3044 AF077029
Sequence 3045 U57091
Sequence 3046 X80197
Sequence 3047 AB018284
Sequence 3048 X13839
Sequence 3049 AL096716
Sequence 3050 D30658
Sequence 3051 AB002381
Sequence 3052 Z47087
Sequence 3053 AF002672
Sequence 3054 X54304
Sequence 3055 X00452
Sequence 3056 AF070655
Sequence 3057 M15887
Sequence 3058 L13616
Sequence 3059 AF105277
Sequence 3060 AF007135
Sequence 3061 AF046001
Sequence 3062 AF188202
Sequence 3063 X87176
Sequence 3064 E06721
Sequence 3065 AF077045
Sequence 3066 D13287
Sequence 3067 X57766
Sequence 3068 D13119
Sequence 3069 X74979
Sequence 3070 M13692
Sequence 3071 D43947
Sequence 3072 D12485
Sequence 3073 AB033056

Sequence 3074 M32790
Sequence 3075 J03191
Sequence 3076 M55150
Sequence 3077 J04794
Sequence 3078 Z31696
Sequence 3079 X79536
Sequence 3080 L20814
Sequence 3081 M94556
Sequence 3082 AF200348
Sequence 3083 X55122
Sequence 3084 AF044956
Sequence 3085 M22349
Sequence 3086 AF169797
Sequence 3087 X04588
Sequence 3088 J02642
Sequence 3089 AF059617
Sequence 3090 Y00282
Sequence 3091 S68531
Sequence 3092 X05231
Sequence 3093 M29873
Sequence 3094 Y13367
Sequence 3095 AJ012463
Sequence 3096 M69043
Sequence 3097 X58072
Sequence 3098 AF007150
Sequence 3099 M12623
Sequence 3100 AF098109
Sequence 3101 AF038451
Sequence 3102 M60756
Sequence 3103 AB015856
Sequence 3104 AB012910
Sequence 3105 D87469
Sequence 3106 D87742
Sequence 3107 L05093
Sequence 3108 U41724
Sequence 3109 E02025
Sequence 3110 AF070597
Sequence 3111 AF070649
Sequence 3112 AJ012409
Sequence 3113 AF035408
Sequence 3114 D61380
Sequence 3115 E05732
Sequence 3116 X73114
Sequence 3117 L08044
Sequence 3118 U68140
Sequence 3119 AF053944
Sequence 3120 AF070626
Sequence 3121 X15729
Sequence 3122 U16306
Sequence 3123 M26325
Sequence 3124 AF043472
Sequence 3125 X03635

TABLE 8

Sequence 3126	AF078848	Sequence 3178	AF007791
Sequence 3127	AF037204	Sequence 3179	L13923
Sequence 3128	AB020675	Sequence 3180	X95190
Sequence 3129	AF039019	Sequence 3181	AF022795
Sequence 3130	X05276	Sequence 3182	AF026939
Sequence 3131	AF054990	Sequence 3183	AF070561
Sequence 3132	AF035121	Sequence 3184	M12937
Sequence 3133	X04098	Sequence 3185	M31627
Sequence 3134	M11718	Sequence 3186	L20941
Sequence 3135	M77830	Sequence 3187	AB018265
Sequence 3136	AB020636	Sequence 3188	S73591
Sequence 3137	M99626	Sequence 3189	AF140242
Sequence 3138	D11428	Sequence 3190	AB033115
Sequence 3139	D87127	Sequence 3191	M10940
Sequence 3140	Z74615	Sequence 3192	M19309
Sequence 3141	Y00815	Sequence 3193	AF015287
Sequence 3142	U59877	Sequence 3194	M74491
Sequence 3143	X52520	Sequence 3195	AF084520
Sequence 3144	Z49270	Sequence 3196	M60857
Sequence 3145	K00409	Sequence 3197	D50918
Sequence 3146	J03040	Sequence 3198	M69177
Sequence 3147	AF075061	Sequence 3199	M14631
Sequence 3148	AF075587	Sequence 3200	L38995
Sequence 3149	M69106	Sequence 3201	AB019691
Sequence 3150	M10905	Sequence 3202	AB007946
Sequence 3151	AF015926	Sequence 3203	AF106681
Sequence 3152	D16688	Sequence 3204	D00017
Sequence 3153	X95384	Sequence 3205	D43969
Sequence 3154	AL122072	Sequence 3206	U47741
Sequence 3155	U23942	Sequence 3207	D43968
Sequence 3156	AF026692	Sequence 3208	AF121856
Sequence 3157	AF016270	Sequence 3209	X02761
Sequence 3158	M24194	Sequence 3210	AF047439
Sequence 3159	AJ010442	Sequence 3211	Y00052
Sequence 3160	AF061738	Sequence 3212	M96995
Sequence 3161	L24123	Sequence 3213	AF144103
Sequence 3162	U90907	Sequence 3214	AJ002308
Sequence 3163	AF052124	Sequence 3215	M10119
Sequence 3164	AB011123	Sequence 3216	M14200
Sequence 3165	AB019563	Sequence 3217	AF083246
Sequence 3166	Y10179	Sequence 3218	L26050
Sequence 3167	S82616	Sequence 3219	AB020694
Sequence 3168	M55621	Sequence 3220	AL110224
Sequence 3169	U37230	Sequence 3221	AL122047
Sequence 3170	U43189	Sequence 3222	D84109
Sequence 3171	D29640	Sequence 3223	AF070659
Sequence 3172	X64707	Sequence 3224	J03210
Sequence 3173	M11146	Sequence 3225	U05291
Sequence 3174	AF052161	Sequence 3226	AB002366
Sequence 3175	X00497	Sequence 3227	U41060
Sequence 3176	AF081282	Sequence 3228	AF093774
Sequence 3177	M58485	Sequence 3229	M16247

TABLE 8

Sequence 3230	D49489	Sequence 3282	AL050137
Sequence 3231	D80005	Sequence 3283	AF147398
Sequence 3232	U70063	Sequence 3284	AL050205
Sequence 3233	AB004854	Sequence 3285	U33821
Sequence 3234	M93651	Sequence 3286	M64098
Sequence 3235	AB011087	Sequence 3287	M61832
Sequence 3236	U19348	Sequence 3288	D29805
Sequence 3237	U67171	Sequence 3289	E08663
Sequence 3238	M83248	Sequence 3290	AB003184
Sequence 3239	D87667	Sequence 3291	D89675
Sequence 3240	AF038452	Sequence 3292	AB002353
Sequence 3241	J03799	Sequence 3293	M11560
Sequence 3242	M62403	Sequence 3294	AB007865
Sequence 3243	AF067656	Sequence 3295	D42138
Sequence 3244	E02904	Sequence 3296	M87789
Sequence 3245	AF014402	Sequence 3297	D13643
Sequence 3246	L09159	Sequence 3298	AF070555
Sequence 3247	AB016533	Sequence 3299	M20259
Sequence 3248	U22314	Sequence 3300	E02628
Sequence 3249	M84326	Sequence 3301	M14794
Sequence 3250	AB014600	Sequence 3302	J02814
Sequence 3251	U57846	Sequence 3303	D26068
Sequence 3252	X91625	Sequence 3304	E01650
Sequence 3253	D90453	Sequence 3305	AF077202
Sequence 3254	AB022653	Sequence 3306	AF131856
Sequence 3255	AF051941	Sequence 3307	AL080113
Sequence 3256	E01797	Sequence 3308	AF047020
Sequence 3257	X97124	Sequence 3309	AF073298
Sequence 3258	U30521	Sequence 3310	S74728
Sequence 3259	AF107406	Sequence 3311	M25246
Sequence 3260	X80199	Sequence 3312	X01742
Sequence 3261	AF055584	Sequence 3313	S70290
Sequence 3262	AF086183	Sequence 3314	D45370
Sequence 3263	AF176012	Sequence 3315	L15702
Sequence 3264	AF032110	Sequence 3316	AL080192
Sequence 3265	X14420	Sequence 3317	AL049381
Sequence 3266	U55853	Sequence 3318	M18642
Sequence 3267	M29870	Sequence 3319	Y17957
Sequence 3268	U12255	Sequence 3320	J03037
Sequence 3269	U19718	Sequence 3321	X63556
Sequence 3270	D63874	Sequence 3322	X04408
Sequence 3271	AB014599	Sequence 3323	AF100153
Sequence 3272	L33854	Sequence 3324	U57847
Sequence 3273	AF074331	Sequence 3325	AF138300
Sequence 3274	X75861	Sequence 3326	U63542
Sequence 3275	L37385	Sequence 3327	U59919
Sequence 3276	U05875	Sequence 3328	M23263
Sequence 3277	X82456	Sequence 3329	AF151878
Sequence 3278	AF162704	Sequence 3330	AF065388
Sequence 3279	AF021819	Sequence 3331	D61391
Sequence 3280	AB029000	Sequence 3332	M17885
Sequence 3281	AB021288	Sequence 3333	S75895

TABLE 8

Sequence 3334	AF039022	Sequence 3386	J05211
Sequence 3335	S59749	Sequence 3387	X73608
Sequence 3336	D25274	Sequence 3388	J04080
Sequence 3337	U70439	Sequence 3389	AF073957
Sequence 3338	AF168956	Sequence 3390	AB029006
Sequence 3339	AF116910	Sequence 3391	AL117461
Sequence 3340	AF151801	Sequence 3392	AF022385
Sequence 3341	K00065	Sequence 3393	D26054
Sequence 3342	X86691	Sequence 3394	AB033049
Sequence 3343	U12404	Sequence 3395	M16342
Sequence 3344	AF038952	Sequence 3396	AF038954
Sequence 3345	D87455	Sequence 3397	AF016492
Sequence 3346	AL050095	Sequence 3398	Y15286
Sequence 3347	AB023209	Sequence 3399	AF159295
Sequence 3348	AJ000334	Sequence 3400	AF045184
Sequence 3349	U26162	Sequence 3401	L03558
Sequence 3350	D78014	Sequence 3402	X65882
Sequence 3351	U09278	Sequence 3403	AJ001612
Sequence 3352	Y10043	Sequence 3404	M13665
Sequence 3353	AF052164	Sequence 3405	AB026833
Sequence 3354	AF037335	Sequence 3406	M60724
Sequence 3355	X79234	Sequence 3407	M24019
Sequence 3356	AL110273	Sequence 3408	D16224
Sequence 3357	S65738	Sequence 3409	AB033085
Sequence 3358	D87666	Sequence 3410	J04164
Sequence 3359	AL050044	Sequence 3411	AF121855
Sequence 3360	X76184	Sequence 3412	U42594
Sequence 3361	U01833	Sequence 3413	L38961
Sequence 3362	AJ223352	Sequence 3414	S74678
Sequence 3363	D13666	Sequence 3415	X57527
Sequence 3364	AF054174	Sequence 3416	AF026381
Sequence 3365	AF093535	Sequence 3417	AB032951
Sequence 3366	M11353	Sequence 3418	AL122075
Sequence 3367	Y14736	Sequence 3419	V00503
Sequence 3368	AF103374	Sequence 3420	AF028832
Sequence 3369	AJ011007	Sequence 3421	AL049383
Sequence 3370	D64154	Sequence 3422	Z21507
Sequence 3371	D25542	Sequence 3423	Y12670
Sequence 3372	L41143	Sequence 3424	AF037447
Sequence 3373	L12168	Sequence 3425	L20010
Sequence 3374	D14665	Sequence 3426	AB006621
Sequence 3375	AB033070	Sequence 3427	D32129
Sequence 3376	AF007170	Sequence 3428	AF062249
Sequence 3377	U41569	Sequence 3429	X07393
Sequence 3378	AF106943	Sequence 3430	M37712
Sequence 3379	L25085	Sequence 3431	X69910
Sequence 3380	AF042081	Sequence 3432	AB007858
Sequence 3381	AB004850	Sequence 3433	U37283
Sequence 3382	X14583	Sequence 3434	D84212
Sequence 3383	AF100759	Sequence 3435	X65614
Sequence 3384	J03460	Sequence 3436	U97251
Sequence 3385	U80765	Sequence 3437	L07615

TABLE 8

Sequence 3438	D28759	Sequence 3490	AB002357
Sequence 3439	U42458	Sequence 3491	L15203
Sequence 3440	D00422	Sequence 3492	J03548
Sequence 3441	U47101	Sequence 3493	U41740
Sequence 3442	D45917	Sequence 3494	D38583
Sequence 3443	Z22658	Sequence 3495	D83077
Sequence 3444	AF051882	Sequence 3496	AF088038
Sequence 3445	AF125100	Sequence 3497	AF034803
Sequence 3446	L03162	Sequence 3498	X63432
Sequence 3447	AB007934	Sequence 3499	AF112968
Sequence 3448	J03241	Sequence 3500	X81695
Sequence 3449	D14662	Sequence 3501	AL050277
Sequence 3450	AJ006470	Sequence 3502	AF020797
Sequence 3451	M14060	Sequence 3503	M24900
Sequence 3452	U46689	Sequence 3504	U19495
Sequence 3453	S48220	Sequence 3505	D13665
Sequence 3454	AF070672	Sequence 3506	X52022
Sequence 3455	X65724	Sequence 3507	J04177
Sequence 3456	AF100741	Sequence 3508	J03007
Sequence 3457	U43701	Sequence 3509	AF085844
Sequence 3458	M99425	Sequence 3510	AF086293
Sequence 3459	AF072810	Sequence 3511	S41458
Sequence 3460	K02054	Sequence 3512	S74681
Sequence 3461	X02902	Sequence 3513	U36221
Sequence 3462	Z75331	Sequence 3514	U28811
Sequence 3463	AF100755	Sequence 3515	AF074606
Sequence 3464	AJ133133	Sequence 3516	M19308
Sequence 3465	D83174	Sequence 3517	L03532
Sequence 3466	AB007960	Sequence 3518	Y00503
Sequence 3467	M33680	Sequence 3519	D87812
Sequence 3468	X61969	Sequence 3520	M10906
Sequence 3469	M11315	Sequence 3521	AF153608
Sequence 3470	X55037	Sequence 3522	D01059
Sequence 3471	AF061258	Sequence 3523	AF104914
Sequence 3472	AF097362	Sequence 3524	AL110191
Sequence 3473	U18121	Sequence 3525	M31126
Sequence 3474	AF097709	Sequence 3526	L38608
Sequence 3475	M74509	Sequence 3527	X90857
Sequence 3476	AF000364	Sequence 3528	X73459
Sequence 3477	AB011098	Sequence 3529	M13519
Sequence 3478	U90304	Sequence 3530	X60067
Sequence 3479	AL049447	Sequence 3531	J02943
Sequence 3480	AJ005259	Sequence 3532	AL050197
Sequence 3481	X58082	Sequence 3533	AL117633
Sequence 3482	AF147334	Sequence 3534	J04183
Sequence 3483	AB016789	Sequence 3535	X06700
Sequence 3484	AB007862	Sequence 3536	D16481
Sequence 3485	U41850	Sequence 3537	AF087481
Sequence 3486	U61397	Sequence 3538	AB007930
Sequence 3487	AF054187	Sequence 3539	AF003594
Sequence 3488	AF013759	Sequence 3540	S79895
Sequence 3489	U77665	Sequence 3541	AB018346

TABLE 8

Sequence 3542	U21128	Sequence 3594	AF150087
Sequence 3543	X56998	Sequence 3595	AF006085
Sequence 3544	AF100756	Sequence 3596	M23254
Sequence 3545	AB033073	Sequence 3597	M14058
Sequence 3546	AB019524	Sequence 3598	AF113887
Sequence 3547	E00200	Sequence 3599	D59253
Sequence 3548	M58525	Sequence 3600	AB011128
Sequence 3549	M31159	Sequence 3601	AB011102
Sequence 3550	Z29331	Sequence 3602	AF086402
Sequence 3551	AF044671	Sequence 3603	J05192
Sequence 3552	U42457	Sequence 3604	AJ004955
Sequence 3553	D87845	Sequence 3605	AF091075
Sequence 3554	U52100	Sequence 3606	L36033
Sequence 3555	X03363	Sequence 3607	D83777
Sequence 3556	AF125102	Sequence 3608	AF064084
Sequence 3557	U30246	Sequence 3609	AB023420
Sequence 3558	AF070609	Sequence 3610	Z74616
Sequence 3559	AB023219	Sequence 3611	AF038955
Sequence 3560	AF131738	Sequence 3612	AF086389
Sequence 3561	U18728	Sequence 3613	D49677
Sequence 3562	Y16241	Sequence 3614	D29956
Sequence 3563	L12711	Sequence 3615	AF077301
Sequence 3564	L19597	Sequence 3616	M16660
Sequence 3565	D83327	Sequence 3617	U38817
Sequence 3566	Y17171	Sequence 3618	J00200
Sequence 3567	X14787	Sequence 3619	M14354
Sequence 3568	U16798	Sequence 3620	X55954
Sequence 3569	L00160	Sequence 3621	AF059611
Sequence 3570	U46006	Sequence 3622	U95822
Sequence 3571	AF132942	Sequence 3623	M85168
Sequence 3572	X82834	Sequence 3624	AB032990
Sequence 3573	X81696	Sequence 3625	AA088197
Sequence 3574	U64791	Sequence 3626	AI589315
Sequence 3575	AF077037	Sequence 3627	AA872753
Sequence 3576	AF188298	Sequence 3628	AI216969
Sequence 3577	AB028969	Sequence 3629	AW022300
Sequence 3578	D42073	Sequence 3630	AI546975
Sequence 3579	X04665	Sequence 3631	AA399320
Sequence 3580	U39840	Sequence 3632	AI148251
Sequence 3581	AL133076	Sequence 3633	AA507383
Sequence 3582	S69272	Sequence 3634	AA663776
Sequence 3583	X70326	Sequence 3635	D83863
Sequence 3584	Z11894	Sequence 3636	AA374976
Sequence 3585	D13286	Sequence 3637	AA625188
Sequence 3586	AF106684	Sequence 3638	AA228145
Sequence 3587	X78138	Sequence 3639	AA618345
Sequence 3588	U14969	Sequence 3640	AI086978
Sequence 3589	AJ001019	Sequence 3641	AA169241
Sequence 3590	AB002377	Sequence 3642	AA319742
Sequence 3591	AF015308	Sequence 3643	AA088691
Sequence 3592	AF091084	Sequence 3644	AI760839
Sequence 3593	M65212	Sequence 3645	AA329308

TABLE 8

Sequence 3646	AW069860	Sequence 3698	AI536688
Sequence 3647	AA705508	Sequence 3699	AA582588
Sequence 3648	F08552	Sequence 3700	AA436588
Sequence 3649	AA375944	Sequence 3701	AI499393
Sequence 3650	AA383260	Sequence 3702	AA393803
Sequence 3651	C02101	Sequence 3703	AL038664
Sequence 3652	AA029988	Sequence 3704	AI124736
Sequence 3653	C03926	Sequence 3705	AW019967
Sequence 3654	AA307256	Sequence 3706	AA938297
Sequence 3655	AA633399	Sequence 3707	AA312170
Sequence 3656	AA115638	Sequence 3708	AI253288
Sequence 3657	AA356459	Sequence 3709	AI524536
Sequence 3658	AI312542	Sequence 3710	AA626192
Sequence 3659	AA897154	Sequence 3711	AA365448
Sequence 3660	AI683431	Sequence 3712	AI810954
Sequence 3661	AI267162	Sequence 3713	AA194163
Sequence 3662	AI690296	Sequence 3714	AA318771
Sequence 3663	AA143192	Sequence 3715	AI033531
Sequence 3664	AA224004	Sequence 3716	AA412108
Sequence 3665	AA934622	Sequence 3717	AI084561
Sequence 3666	AA370509	Sequence 3718	AA236316
Sequence 3667	AI088555	Sequence 3719	AA010493
Sequence 3668	R71595	Sequence 3720	AA446505
Sequence 3669	AA599483	Sequence 3721	H94496
Sequence 3670	AI267185	Sequence 3722	AI360176
Sequence 3671	AL036415	Sequence 3723	AI678782
Sequence 3672	AI668594	Sequence 3724	Z43969
Sequence 3673	AW173504	Sequence 3725	AI200991
Sequence 3674	AA161296	Sequence 3726	AI951970
Sequence 3675	AI820995	Sequence 3727	AA234130
Sequence 3676	AI624247	Sequence 3728	AL039220
Sequence 3677	AI028542	Sequence 3729	D77037
Sequence 3678	AA487801	Sequence 3730	AW081651
Sequence 3679	AI267416	Sequence 3731	AA976043
Sequence 3680	AI203950	Sequence 3732	AA527708
Sequence 3681	AI814452	Sequence 3733	AA487580
Sequence 3682	AA479505	Sequence 3734	AA034993
Sequence 3683	AA309988	Sequence 3735	AA355987
Sequence 3684	AA043640	Sequence 3736	AA775561
Sequence 3685	AA129011	Sequence 3737	AI754599
Sequence 3686	AW008535	Sequence 3738	AA229611
Sequence 3687	AI752929	Sequence 3739	AI961346
Sequence 3688	AA706942	Sequence 3740	AA493609
Sequence 3689	AI400676	Sequence 3741	AI570354
Sequence 3690	AL120743	Sequence 3742	AA155789
Sequence 3691	R84598	Sequence 3743	AA928915
Sequence 3692	AI274872	Sequence 3744	R97416
Sequence 3693	AA304332	Sequence 3745	AI753009
Sequence 3694	AW020139	Sequence 3746	AI285971
Sequence 3695	AI066419	Sequence 3747	AA225755
Sequence 3696	AA676495	Sequence 3748	AI150588
Sequence 3697	R35995	Sequence 3749	AA382550

TABLE 8

Sequence 3750	AA707659	Sequence 3802	AA424448
Sequence 3751	AA054556	Sequence 3803	AA713551
Sequence 3752	AI750535	Sequence 3804	AI750383
Sequence 3753	W57589	Sequence 3805	AI879040
Sequence 3754	AI422378	Sequence 3806	AA179743
Sequence 3755	M78319	Sequence 3807	AA333266
Sequence 3756	W19986	Sequence 3808	AA775450
Sequence 3757	AA522675	Sequence 3809	AA743813
Sequence 3758	AL118633	Sequence 3810	AA034226
Sequence 3759	AA236761	Sequence 3811	AA427898
Sequence 3760	AA653690	Sequence 3812	AA480343
Sequence 3761	AA604055	Sequence 3813	AA315049
Sequence 3762	AI581291	Sequence 3814	AA721387
Sequence 3763	AI859619	Sequence 3815	AA599358
Sequence 3764	AA151651	Sequence 3816	AA257980
Sequence 3765	AI990727	Sequence 3817	AF034186
Sequence 3766	AI825799	Sequence 3818	AA278729
Sequence 3767	AL039459	Sequence 3819	AI815850
Sequence 3768	AA970073	Sequence 3820	AA853990
Sequence 3769	AI480351	Sequence 3821	AA192604
Sequence 3770	AI753968	Sequence 3822	R82186
Sequence 3771	AI679118	Sequence 3823	H51496
Sequence 3772	AI300535	Sequence 3824	AA448227
Sequence 3773	AA232626	Sequence 3825	AL037904
Sequence 3774	AA376034	Sequence 3826	AA436224
Sequence 3775	AI033304	Sequence 3827	W20408
Sequence 3776	AA977019	Sequence 3828	AA876987
Sequence 3777	AA102695	Sequence 3829	AA485887
Sequence 3778	AA449862	Sequence 3830	AA164861
Sequence 3779	AI683419	Sequence 3831	AA970266
Sequence 3780	AA994857	Sequence 3832	AA088783
Sequence 3781	AA480299	Sequence 3833	AA565420
Sequence 3782	U69188	Sequence 3834	AA580448
Sequence 3783	AA303836	Sequence 3835	AI086572
Sequence 3784	AA599454	Sequence 3836	AI570378
Sequence 3785	AI205219	Sequence 3837	AI950225
Sequence 3786	AA420536	Sequence 3838	AI750879
Sequence 3787	AA446594	Sequence 3839	AA081419
Sequence 3788	AI525843	Sequence 3840	AI217035
Sequence 3789	AI081884	Sequence 3841	AI300033
Sequence 3790	AA306663	Sequence 3842	AW149836
Sequence 3791	AW069784	Sequence 3843	AA394049
Sequence 3792	AI143965	Sequence 3844	AI334437
Sequence 3793	AA602867	Sequence 3845	AA160635
Sequence 3794	AA535276	Sequence 3846	AI240528
Sequence 3795	N51016	Sequence 3847	AA020878
Sequence 3796	H11407	Sequence 3848	AI751956
Sequence 3797	AI951118	Sequence 3849	AA317855
Sequence 3798	AA650243	Sequence 3850	AA528123
Sequence 3799	AI394104	Sequence 3851	AI610142
Sequence 3800	AI735683	Sequence 3852	AA132979
Sequence 3801	AA316761	Sequence 3853	AA834739

TABLE 8

Sequence 4270	AA526003	Sequence 4322	AI567732
Sequence 4271	AA147491	Sequence 4323	AA554299
Sequence 4272	AI580023	Sequence 4324	AI376591
Sequence 4273	AI620460	Sequence 4325	AA398892
Sequence 4274	AI760398	Sequence 4326	AA314659
Sequence 4275	AI690278	Sequence 4327	R71849
Sequence 4276	AI458411	Sequence 4328	AI598262
Sequence 4277	AA182841	Sequence 4329	AW239489
Sequence 4278	AI420543	Sequence 4330	AA330289
Sequence 4279	AA393869	Sequence 4331	AA515132
Sequence 4280	AI674390	Sequence 4332	AA085503
Sequence 4281	AA683022	Sequence 4333	AA694120
Sequence 4282	AA249711	Sequence 4334	AA358474
Sequence 4283	AA399628	Sequence 4335	AA100477
Sequence 4284	AA503355	Sequence 4336	C17558
Sequence 4285	AI346554	Sequence 4337	AA442980
Sequence 4286	AA665901	Sequence 4338	AA852143
Sequence 4287	AI754013	Sequence 4339	AW007623
Sequence 4288	AI050729	Sequence 4340	AA629406
Sequence 4289	AI076787	Sequence 4341	AA333390
Sequence 4290	AA577120	Sequence 4342	AA406595
Sequence 4291	AA152027	Sequence 4343	AI758899
Sequence 4292	AI814360	Sequence 4344	AA160163
Sequence 4293	AA876439	Sequence 4345	AI433964
Sequence 4294	AA372230	Sequence 4346	AA132005
Sequence 4295	AA100535	Sequence 4347	AI751989
Sequence 4296	AA284584	Sequence 4348	AI374966
Sequence 4297	AA128641	Sequence 4349	AA490495
Sequence 4298	AA706241	Sequence 4350	AW069594
Sequence 4299	AI307583	Sequence 4351	AI366549
Sequence 4300	N59230	Sequence 4352	AA622912
Sequence 4301	AA954939	Sequence 4353	AI755100
Sequence 4302	AI031607	Sequence 4354	AI992195
Sequence 4303	Z42387	Sequence 4355	AA418080
Sequence 4304	AI914586	Sequence 4356	T87083
Sequence 4305	AL120299	Sequence 4357	AI284933
Sequence 4306	AI125410	Sequence 4358	AA340355
Sequence 4307	AA044877	Sequence 4359	AA479646
Sequence 4308	AA156317	Sequence 4360	AA243332
Sequence 4309	AA569826	Sequence 4361	AI927856
Sequence 4310	AA234295	Sequence 4362	AA093542
Sequence 4311	AA649113	Sequence 4363	AI826702
Sequence 4312	AA113027	Sequence 4364	AW175618
Sequence 4313	AA435801	Sequence 4365	AI087336
Sequence 4314	AA411394	Sequence 4366	AA731543
Sequence 4315	AA524091	Sequence 4367	AA653692
Sequence 4316	AA631021	Sequence 4368	AA344382
Sequence 4317	AA324570	Sequence 4369	AI431756
Sequence 4318	AI452786	Sequence 4370	AA083182
Sequence 4319	AA069486	Sequence 4371	AI349288
Sequence 4320	AI085887	Sequence 4372	F15703
Sequence 4321	AI253436	Sequence 4373	AI752553

TABLE 8

Sequence 4374	AA989224	Sequence 4426	AA507595
Sequence 4375	AA513722	Sequence 4427	AI686325
Sequence 4376	AI872301	Sequence 4428	AA152069
Sequence 4377	AI870698	Sequence 4429	AA905491
Sequence 4378	AI680313	Sequence 4430	AA441905
Sequence 4379	AA598875	Sequence 4431	AI286057
Sequence 4380	AA058929	Sequence 4432	AI148707
Sequence 4381	AI344718	Sequence 4433	AL038513
Sequence 4382	AI126442	Sequence 4434	AA180074
Sequence 4383	AA927862	Sequence 4435	AI124281
Sequence 4384	AA622496	Sequence 4436	AA122240
Sequence 4385	AA594604	Sequence 4437	AA151674
Sequence 4386	C18825	Sequence 4438	AA306552
Sequence 4387	AA025156	Sequence 4439	AA836750
Sequence 4388	AW084652	Sequence 4440	W79315
Sequence 4389	AI337868	Sequence 4441	AA146589
Sequence 4390	AA452310	Sequence 4442	AI560267
Sequence 4391	AA632623	Sequence 4443	AA189029
Sequence 4392	AI028405	Sequence 4444	AL040975
Sequence 4393	AA829541	Sequence 4445	AW135217
Sequence 4394	AA031935	Sequence 4446	AA564944
Sequence 4395	AA443246	Sequence 4447	AA903185
Sequence 4396	AA808355	Sequence 4448	AA121718
Sequence 4397	AA421743	Sequence 4449	R92392
Sequence 4398	AI253335	Sequence 4450	AI885416
Sequence 4399	AA446325	Sequence 4451	AA916110
Sequence 4400	AA242891	Sequence 4452	AA775370
Sequence 4401	R59077	Sequence 4453	AA776792
Sequence 4402	AA010897	Sequence 4454	AA811942
Sequence 4403	AI732680	Sequence 4455	AA678251
Sequence 4404	AW087359	Sequence 4456	R97459
Sequence 4405	AA375465	Sequence 4457	AA112896
Sequence 4406	AI801294	Sequence 4458	AA767025
Sequence 4407	AI752167	Sequence 4459	AA501434
Sequence 4408	AI765377	Sequence 4460	AA369981
Sequence 4409	AA886990	Sequence 4461	AI217021
Sequence 4410	AA775120	Sequence 4462	AA318185
Sequence 4411	AA295348	Sequence 4463	AA496580
Sequence 4412	AI307210	Sequence 4464	Z41877
Sequence 4413	AW009489	Sequence 4465	AI581532
Sequence 4414	AI189607	Sequence 4466	AW190301
Sequence 4415	AA001815	Sequence 4467	AA402273
Sequence 4416	AA249130	Sequence 4468	AI051296
Sequence 4417	AI460220	Sequence 4469	AI075324
Sequence 4418	AA479044	Sequence 4470	AI681959
Sequence 4419	AI701977	Sequence 4471	AI064914
Sequence 4420	AI770116	Sequence 4472	AA864778
Sequence 4421	AI031595	Sequence 4473	AA148915
Sequence 4422	AA836271	Sequence 4474	AI268948
Sequence 4423	AA156886	Sequence 4475	AI401365
Sequence 4424	F21836	Sequence 4476	AA136756
Sequence 4425	AI127045	Sequence 4477	AA714835

TABLE 8

Sequence 4478	AA481983	Sequence 4530	AA907109
Sequence 4479	AA987288	Sequence 4531	W21979
Sequence 4480	AI583227	Sequence 4532	AA126121
Sequence 4481	H84546	Sequence 4533	AI269161
Sequence 4482	AA744819	Sequence 4534	AA379286
Sequence 4483	H39960	Sequence 4535	AA864814
Sequence 4484	AA022965	Sequence 4536	AI077905
Sequence 4485	AA247210	Sequence 4537	AA262164
Sequence 4486	AI878910	Sequence 4538	AA127069
Sequence 4487	AA165074	Sequence 4539	AI433659
Sequence 4488	AL040896	Sequence 4540	AA486529
Sequence 4489	AI375461	Sequence 4541	AA329152
Sequence 4490	AI500553	Sequence 4542	AI753788
Sequence 4491	H04616	Sequence 4543	AL048540
Sequence 4492	AA128305	Sequence 4544	AA028897
Sequence 4493	AI041929	Sequence 4545	AW068565
Sequence 4494	AI523447	Sequence 4546	AA741567
Sequence 4495	AA598471	Sequence 4547	AA610476
Sequence 4496	AA852332	Sequence 4548	H10463
Sequence 4497	AA635590	Sequence 4549	AI277450
Sequence 4498	AW084050	Sequence 4550	AI380214
Sequence 4499	AA494295	Sequence 4551	AI354673
Sequence 4500	AI701179	Sequence 4552	AA363582
Sequence 4501	AW029321	Sequence 4553	AI708630
Sequence 4502	AA429336	Sequence 4554	AA421682
Sequence 4503	AA649992	Sequence 4555	AA137120
Sequence 4504	AW058627	Sequence 4556	AA876364
Sequence 4505	AA479267	Sequence 4557	AA603150
Sequence 4506	AA165490	Sequence 4558	AA406425
Sequence 4507	AI889738	Sequence 4559	AI799626
Sequence 4508	AI071258	Sequence 4560	AI078041
Sequence 4509	AA829730	Sequence 4561	AI143148
Sequence 4510	AW020828	Sequence 4562	AA975538
Sequence 4511	AA382541	Sequence 4563	AA295982
Sequence 4512	AA215330	Sequence 4564	W67653
Sequence 4513	AA101201	Sequence 4565	AA099424
Sequence 4514	AA194429	Sequence 4566	AW070951
Sequence 4515	R12659	Sequence 4567	AI354935
Sequence 4516	AA129826	Sequence 4568	AA603500
Sequence 4517	AI499592	Sequence 4569	AI829126
Sequence 4518	AA613907	Sequence 4570	AA224157
Sequence 4519	AA665829	Sequence 4571	AW156886
Sequence 4520	AW005955	Sequence 4572	AI360993
Sequence 4521	AL120047	Sequence 4573	AA010814
Sequence 4522	AW151216	Sequence 4574	AA470705
Sequence 4523	AA375815	Sequence 4575	AW118331
Sequence 4524	AI537677	Sequence 4576	AA503101
Sequence 4525	AW022290	Sequence 4577	AI262138
Sequence 4526	AI267454	Sequence 4578	AI374808
Sequence 4527	AA497028	Sequence 4579	AI308850
Sequence 4528	AA442829	Sequence 4580	AA788711
Sequence 4529	AA044675	Sequence 4581	AA480980

TABLE 8

Sequence 4582	AI525552	Sequence 4634	AI358205
Sequence 4583	AA625994	Sequence 4635	AA778600
Sequence 4584	AI081113	Sequence 4636	AA836985
Sequence 4585	AI431318	Sequence 4637	AL037564
Sequence 4586	AA336843	Sequence 4638	W31647
Sequence 4587	AA164204	Sequence 4639	AI288730
Sequence 4588	AL120535	Sequence 4640	AA639707
Sequence 4589	AI475467	Sequence 4641	AA861665
Sequence 4590	AA037259	Sequence 4642	AI566742
Sequence 4591	AI523167	Sequence 4643	AW022466
Sequence 4592	AI216971	Sequence 4644	AI312092
Sequence 4593	AI038129	Sequence 4645	AI074585
Sequence 4594	AA029089	Sequence 4646	AI803698
Sequence 4595	AA430565	Sequence 4647	AW072611
Sequence 4596	AI052317	Sequence 4648	AA346581
Sequence 4597	AW026131	Sequence 4649	AA194152
Sequence 4598	T34541	Sequence 4650	AA402425
Sequence 4599	AA477215	Sequence 4651	AI349801
Sequence 4600	AA470973	Sequence 4652	AA195499
Sequence 4601	AI753666	Sequence 4653	AI821140
Sequence 4602	AA195087	Sequence 4654	AW160557
Sequence 4603	AA165216	Sequence 4655	AA595892
Sequence 4604	AA211369	Sequence 4656	AI566670
Sequence 4605	AA417916	Sequence 4657	AA405124
Sequence 4606	AA315020	Sequence 4658	AA992596
Sequence 4607	AA034306	Sequence 4659	W39064
Sequence 4608	T94936	Sequence 4660	AI354430
Sequence 4609	AW175810	Sequence 4661	AW118530
Sequence 4610	AI922425	Sequence 4662	AA413841
Sequence 4611	AA160916	Sequence 4663	AI124257
Sequence 4612	AW052140	Sequence 4664	AW130098
Sequence 4613	AI125817	Sequence 4665	AI264964
Sequence 4614	AI571517	Sequence 4666	AA868309
Sequence 4615	AA384739	Sequence 4667	AA758701
Sequence 4616	AA393451	Sequence 4668	AA033651
Sequence 4617	AI589524	Sequence 4669	AA648290
Sequence 4618	AA037211	Sequence 4670	AA311516
Sequence 4619	AA345906	Sequence 4671	H15375
Sequence 4620	AI298472	Sequence 4672	T62558
Sequence 4621	AA652478	Sequence 4673	AA057400
Sequence 4622	AA725605	Sequence 4674	D62631
Sequence 4623	AA578718	Sequence 4675	AI290139
Sequence 4624	AA704151	Sequence 4676	AA805770
Sequence 4625	AA375412	Sequence 4677	AA551118
Sequence 4626	AI269464	Sequence 4678	AA847541
Sequence 4627	AI190341	Sequence 4679	N32802
Sequence 4628	AI077695	Sequence 4680	AA485617
Sequence 4629	AL036003	Sequence 4681	AI765853
Sequence 4630	AA836962	Sequence 4682	AW026300
Sequence 4631	AA847851	Sequence 4683	AL037828
Sequence 4632	AA689385	Sequence 4684	AA098861
Sequence 4633	AA120819	Sequence 4685	AI637612

TABLE 8

Sequence 4686	AA310885	Sequence 4738	AA398155
Sequence 4687	AA156664	Sequence 4739	AA324629
Sequence 4688	U55978	Sequence 4740	R91802
Sequence 4689	AA481036	Sequence 4741	AA431932
Sequence 4690	AA634260	Sequence 4742	AA304538
Sequence 4691	AW162545	Sequence 4743	AA468250
Sequence 4692	AI042559	Sequence 4744	AA188363
Sequence 4693	AI929819	Sequence 4745	AI810190
Sequence 4694	AI807654	Sequence 4746	AA311766
Sequence 4695	AA102825	Sequence 4747	AW080773
Sequence 4696	AW323331	Sequence 4748	AI753167
Sequence 4697	AI227296	Sequence 4749	AI084647
Sequence 4698	AI267502	Sequence 4750	AA503937
Sequence 4699	AA355096	Sequence 4751	AW190744
Sequence 4700	AA740196	Sequence 4752	AA059409
Sequence 4701	AA179672	Sequence 4753	AA506086
Sequence 4702	R86035	Sequence 4754	AA025141
Sequence 4703	AI040592	Sequence 4755	AI916650
Sequence 4704	AA481220	Sequence 4756	AA872729
Sequence 4705	AI199661	Sequence 4757	AA775030
Sequence 4706	F07802	Sequence 4758	AA111930
Sequence 4707	AI284509	Sequence 4759	AI207628
Sequence 4708	AA425638	Sequence 4760	AI971801
Sequence 4709	W63676	Sequence 4761	AA195834
Sequence 4710	AA506767	Sequence 4762	AA203745
Sequence 4711	AA677603	Sequence 4763	AI535656
Sequence 4712	AA639125	Sequence 4764	AI813758
Sequence 4713	AA127621	Sequence 4765	AI312552
Sequence 4714	AA356055	Sequence 4766	D11960
Sequence 4715	AI066552	Sequence 4767	AA828160
Sequence 4716	AA373276	Sequence 4768	AA293564
Sequence 4717	AA410796	Sequence 4769	AA188301
Sequence 4718	AW073281	Sequence 4770	AA805129
Sequence 4719	T67129	Sequence 4771	H80196
Sequence 4720	AA428216	Sequence 4772	AI380660
Sequence 4721	AI360136	Sequence 4773	W02910
Sequence 4722	AI684577	Sequence 4774	AL039576
Sequence 4723	AI340610	Sequence 4775	AI571507
Sequence 4724	AI871705	Sequence 4776	AA632764
Sequence 4725	AA746700	Sequence 4777	AA506422
Sequence 4726	AA155828	Sequence 4778	AA129385
Sequence 4727	AL119966	Sequence 4779	AI003770
Sequence 4728	AA552170	Sequence 4780	AA055326
Sequence 4729	AA216378	Sequence 4781	N93894
Sequence 4730	AA369796	Sequence 4782	AA165593
Sequence 4731	AL040084	Sequence 4783	AI744728
Sequence 4732	AA522496	Sequence 4784	AI758869
Sequence 4733	AA448526	Sequence 4785	AA453222
Sequence 4734	AI868481	Sequence 4786	AA574074
Sequence 4735	AI300852	Sequence 4787	AW070916
Sequence 4736	AI216975	Sequence 4788	AA305262
Sequence 4737	AA450165	Sequence 4789	AA815316

TABLE 8

Sequence 4790	AA693860	Sequence 4842	AA422060
Sequence 4791	AI819855	Sequence 4843	AA095753
Sequence 4792	AI086608	Sequence 4844	AA293698
Sequence 4793	AA640015	Sequence 4845	AI524985
Sequence 4794	AA601511	Sequence 4846	AI357579
Sequence 4795	R71533	Sequence 4847	AA523196
Sequence 4796	AA993090	Sequence 4848	AI250348
Sequence 4797	AA433901	Sequence 4849	AA847655
Sequence 4798	AI159875	Sequence 4850	AA306068
Sequence 4799	AA339643	Sequence 4851	AA449878
Sequence 4800	AI129342	Sequence 4852	AA579497
Sequence 4801	AA448556	Sequence 4853	AI343059
Sequence 4802	AA182948	Sequence 4854	AA149830
Sequence 4803	R56531	Sequence 4855	AA340069
Sequence 4804	AA884229	Sequence 4856	AI572796
Sequence 4805	AA600879	Sequence 4857	AL048024
Sequence 4806	AA723130	Sequence 4858	AI205275
Sequence 4807	AA113079	Sequence 4859	AI792054
Sequence 4808	AA506630	Sequence 4860	AA446324
Sequence 4809	AA056415	Sequence 4861	AA286729
Sequence 4810	AA010158	Sequence 4862	AA703928
Sequence 4811	AA375961	Sequence 4863	AA418565
Sequence 4812	AI499665	Sequence 4864	AA889143
Sequence 4813	AL049155	Sequence 4865	AI636728
Sequence 4814	AA417806	Sequence 4866	AA808146
Sequence 4815	AI929134	Sequence 4867	AI750846
Sequence 4816	AI091866	Sequence 4868	AI149148
Sequence 4817	AI832799	Sequence 4869	AA664569
Sequence 4818	AA648200	Sequence 4870	H15389
Sequence 4819	AA579845	Sequence 4871	AA319620
Sequence 4820	AT000629	Sequence 4872	AA172073
Sequence 4821	AI307407	Sequence 4873	AL036801
Sequence 4822	AA225307	Sequence 4874	AA640369
Sequence 4823	AA300994	Sequence 4875	AA345904
Sequence 4824	AA363660	Sequence 4876	AA026417
Sequence 4825	AA362083	Sequence 4877	AA010608
Sequence 4826	AI144217	Sequence 4878	AI984763
Sequence 4827	AA129779	Sequence 4879	AA232172
Sequence 4828	AA837219	Sequence 4880	AI089394
Sequence 4829	AI753963	Sequence 4881	AA888729
Sequence 4830	AA479857	Sequence 4882	AA298638
Sequence 4831	AA401211	Sequence 4883	AA310321
Sequence 4832	AA586582	Sequence 4884	AI784535
Sequence 4833	AA311227	Sequence 4885	Z42700
Sequence 4834	AI022090	Sequence 4886	AI133690
Sequence 4835	N28427	Sequence 4887	AU067004
Sequence 4836	AA121779	Sequence 4888	AA004919
Sequence 4837	AI080052	Sequence 4889	AA422008
Sequence 4838	AA653353	Sequence 4890	AI292256
Sequence 4839	AI269060	Sequence 4891	AA401369
Sequence 4840	AI114651	Sequence 4892	AI052124
Sequence 4841	AI366489	Sequence 4893	AA779944

TABLE 8

Sequence 4894	AA128020	Sequence 4946	T05906
Sequence 4895	AA304414	Sequence 4947	Z22091
Sequence 4896	AA774261	Sequence 4948	Q44222
Sequence 4897	AI302102	Sequence 4949	V61359
Sequence 4898	AA112161	Sequence 4950	X39426
Sequence 4899	R61221	Sequence 4951	V32930
Sequence 4900	AA291436	Sequence 4952	V05384
Sequence 4901	AI370835	Sequence 4953	X60581
Sequence 4902	H16051	Sequence 4954	V04202
Sequence 4903	AA467860	Sequence 4955	V15826
Sequence 4904	AI434207	Sequence 4956	V23109
Sequence 4905	AA468395	Sequence 4957	Z33566
Sequence 4906	AA486535	Sequence 4958	Z33949
Sequence 4907	AA748856	Sequence 4959	T18813
Sequence 4908	AA040643	Sequence 4960	T79274
Sequence 4909	AA255815	Sequence 4961	V68992
Sequence 4910	AA789057	Sequence 4962	V90020
Sequence 4911	AA661899	Sequence 4963	Z24872
Sequence 4912	AI084466	Sequence 4964	Z16810
Sequence 4913	AA011405	Sequence 4965	N91825
Sequence 4914	AL045748	Sequence 4966	V05728
Sequence 4915	AA040240	Sequence 4967	X84939
Sequence 4916	AA453693	Sequence 4968	X98641
Sequence 4917	AA033869	Sequence 4969	V57903
Sequence 4918	AI278800	Sequence 4970	Q56733
Sequence 4919	AI267240	Sequence 4971	X39827
Sequence 4920	AA449333	Sequence 4972	Z13903
Sequence 4921	AI221398	Sequence 4973	Z33627
Sequence 4922	AA551240	Sequence 4974	X37385
Sequence 4923	AA487845	Sequence 4975	Z33512
Sequence 4924	AA512935	Sequence 4976	V59600
Sequence 4925	AA527429		
Sequence 4926	AA035773		
Sequence 4927	AI366381		
Sequence 4928	AA741415		
Sequence 4929	AA814728		
Sequence 4930	AA180137		
Sequence 4931	AW247213		
Sequence 4932	AI446503		
Sequence 4933	AA864690		
Sequence 4934	AI085559		
Sequence 4935	X80043		
Sequence 4936	Q65616		
Sequence 4937	V36078		
Sequence 4938	X89854		
Sequence 4939	T26829		
Sequence 4940	Q94780		
Sequence 4941	X37319		
Sequence 4942	Z11491		
Sequence 4943	T91165		
Sequence 4944	V23110		
Sequence 4945	V23112		

TABLE 8

Sequence 4977: found in patent publication WO99/43696

CGCGGCGGCGGCGGAGGTACTCTGCTTATTCTTTCATTCTTGTATTTTTAGCCTTCTAGT
TGAGTTAGGGACCATTTTTATCAGAAATCATTTTAGCACTGTAATAAGAAAAGCTCTGTTA
AGGGTAGATTATATACCATATGATTTTCAGACTTCTTTTTATAAAAAAGGTATCTGGAG
ACTCTGAACAGGCACATGCATACTCAGGGGGAAGGGAACAAAACATGGAGGAGTCTGCCA
AAGCACAAAACCTTCCTTCTGGTCCTCACTGCCTTCAAATAAATACTATTTAAAGAA
AAAAATATCTCACACTGTGATTTAAAAAATCAGTATCTTCCATTCTCTGGGA
GAGTCTTTCCAGGAACCTGTGG

Sequence 4978: found in patent publication WO99/54448

CCGGGCAGGTACGCGGGGAGGAGGTCTGGGTGACTTTGGAAGTCCGTAGTGTCTCATTG
CAGATAATNTTTAGCTTAGGGCCTGGTGGCTAGGTCGGTTCTCTCCTTTCCAGTCGGAGA
CCTCTGCCGCAACATGCTCCGCCAGATCATCNGTCAGGCCNANAAACATTCCTANCCTT
TGACCCCCCNTTTTGTATTTATTTGGGAACTGGGAGCTACTTGGAGCAACGCTGTAT
CTCNTCGCGTNTGGCATATGTTCAATCCATATGTTNTGNTGGACAGAAATAACCCAGA
GCCCTGGAACAACTGGGTCCCA

Sequence 4979: found in patent publication WO99/53051

CCGCGGTGGCGGCGGAGGTACGCGGGGAGGTTACTTGACTGGGAGTTCTCAGACCTCCAG
TTTCAGCCCTGCCCTCAGCCTCCAATCCGTAAGAGACACCCAGCCCCAGCAATTGGATTG
GGCAGCCCGTCTTGACACACCACTGTGCTGAGTGCTTGAGGACGTGTTTCAACAGATGGT
TGGGGTTAGTGTGTGTATCATCATTGAGTGGGGATTAAGAGAAGGAAGGCTGCCCTGCT
GGAGCTGTGTGGTCTTCTCCAAGTGAGAGTCGCAGGCAATAGAACTACTTTGCTTTTGA
GGAAAAGGAGGAATTCATTTTCAGCAGACACAAGAAAAGCAGTTTTTTTTTCAGGTGCTGA

Sequence 4980: found in patent publication WO99/54461

ATAGGGCGAATTGGAGCTCCCCGCGGTGGCGGCCGAGGTACAGGTGCCTGCAGAGATGCC
CACTTTCAGCCAGAAATCTATGGTTTTGCAGATGGTGACTCTCTGCTCAGGCAGAGAAAT
GCCACCAGAGCATAGCTTGGGTTCTCGCCACACGTAAGTAGTCTTTGGATCCCAGCCACA
CAGCTGCTGACGATAGCATGGTAGTCAGCCACTGAGCAGAGCGGGCAAGCAGCCGCGCTC
TCCACAGGAAGTGGAAGTTGCAGCCATCACAGGTCCCATCTGAGCACGTTCTTGGCAGC
AGCAAACCTCCAGGGACAGTTTTCTGTGGACTGCACCTGACGCCGGATGGTGGTGATCTC
CCAGAACTGNAGGACTGGGTCACATTATTGGACCTATAA

Sequence 4981: found in patent publication WO99/58660

CGCCCCGGGCAGGTACAAGTGACAGCACCAGGAACAACCCCTCCCCAGATGCCAAAGCA
TTGCTCTGTATCTAAAGATGCATCCAAGTTTGCAAAAAATTATGGGTAAATCTGGCCATG
TGACCAAGAGGCAGTCAAATCAATTGCTTCCAAAGTCAGAGCTGTTTGAAGGTGATCAG
CTCTTAATTGAACTAGTCATGATGAATCAATCCAAGTACTGCATCCAGTCTGACCTCGG
TGGTTTCCATAAAGGGTTGTTGATGTCTGAGCTGGACAGGGTGGGCAGGAGGTTGAAGA
AAACCAGTTGGTGAGTATAGAAAAGAAATTGCATGTAGAAGTTGTTTGTCTCAAAGAAA
TCTGTAGGTGTTAGAGCTGGGTTTGTATGTTATTGTGAGGGACATTATAATATTGGTAA
GGAGGAGAGAATGATTTGGTGGGGTATTCGAGAAATTTGAGTACCT

Sequence 4982: found in patent publication WO99/64596

CGCCCCGGGCAGGTACTTTTAGAGGATGAAACCTATGTTGAAGAAATTGCGAATATTTTAC
AAGAACTAGGTGCCGATGAGACTGCTGTAGCCAGTATTTTGAACGCTGCCCGGAAGCAA
TTGTCTGTAGTCCAACCGCTGTTAACACCCAGAGAAAACCTCTGGCAGTTGGTCTGCAAAA
ATGAGGAAGAGTTAATCAAGTTAATAGAGCAGTTTCCAGAATCTTTCTTTACTATTAAAG
ACCAAGAGAACCAGAAGCTGAATGTTCAAGTCTTTTCAAGAGTTGGGACTAAAAATGTGG
TCATTAGCAGACTTTTGACAGCTGCACCTAATGTTTTTATAATCCTGTTGAGAAGAATA
AGCAAATGGTAAGAATTCTCCAAGAGAGTTATCTAGATGTAGGTGGCTCTGAGGCCAACA
TGAAAGTTTGGCTACTAAAATTGGTAAGCCAAAACCCATTTATTTTGGTAAATTCTCCAC
AGCTATTAAGGAAACACTAGAATTNTCCAGGAGCAAGGNTCACCAGCTTTGAAATCTTC
CAGCTTCTATCCAACTCAAAGGATTTCTTTTCAACTTGGCCCAAGAAAGTTTCCAGA
AATANGTATTTCTTCTTTTAAATGCTTTTA

TABLE 8

Sequence 4983	AB002806	Sequence 5034	AF038451
Sequence 4984	AF107406	Sequence 5035	U34877
Sequence 4985	X02492	Sequence 5036	L40399
Sequence 4986	X17122	Sequence 5037	X67325
Sequence 4987	AB029005	Sequence 5038	X65614
Sequence 4988	AL049799	Sequence 5039	AB014511
Sequence 4989	AF077029	Sequence 5040	AF147354
Sequence 4990	M97501	Sequence 5041	AF112227
Sequence 4991	AF087481	Sequence 5042	AF054838
Sequence 4992	AB011153	Sequence 5043	M62896
Sequence 4993	AF006305	Sequence 5044	AB019565
Sequence 4994	Y13736	Sequence 5045	L15702
Sequence 4995	Y00815	Sequence 5046	E01954
Sequence 4996	D87666	Sequence 5047	AF124440
Sequence 4997	X57766	Sequence 5048	M29874
Sequence 4998	AB029290	Sequence 5049	AF086628
Sequence 4999	U57093	Sequence 5050	AJ224173
Sequence 5000	L08044	Sequence 5051	AL049419
Sequence 5001	AJ223183	Sequence 5052	AB033058
Sequence 5002	AF151902	Sequence 5053	AF028826
Sequence 5003	M34088	Sequence 5054	A32135
Sequence 5004	D86960	Sequence 5055	E00195
Sequence 5005	L15203	Sequence 5056	L09159
Sequence 5006	J00194	Sequence 5057	AF070523
Sequence 5007	X55675	Sequence 5058	M14631
Sequence 5008	X81422	Sequence 5059	E02822
Sequence 5009	E02025	Sequence 5060	AF026844
Sequence 5010	AF086192	Sequence 5061	M11233
Sequence 5011	J02943	Sequence 5062	Z13009
Sequence 5012	U60337	Sequence 5063	AF037335
Sequence 5013	M16552	Sequence 5064	X12791
Sequence 5014	L77886	Sequence 5065	D80001
Sequence 5015	M13755	Sequence 5066	AF052135
Sequence 5016	X67951	Sequence 5067	Y18460
Sequence 5017	M10119	Sequence 5068	X70326
Sequence 5018	X15729	Sequence 5069	E01972
Sequence 5019	U39067	Sequence 5070	K01500
Sequence 5020	M19285	Sequence 5071	AF071219
Sequence 5021	X52941	Sequence 5072	Y12670
Sequence 5022	AF077034	Sequence 5073	Z47087
Sequence 5023	M10905	Sequence 5074	J03250
Sequence 5024	AF039918	Sequence 5075	X06747
Sequence 5025	S73591	Sequence 5076	X56998
Sequence 5026	U90907	Sequence 5077	AF126181
Sequence 5027	K01396	Sequence 5078	AF060228
Sequence 5028	U30897	Sequence 5079	U32989
Sequence 5029	X84958	Sequence 5080	X01742
Sequence 5030	X03635	Sequence 5081	D44466
Sequence 5031	M18642	Sequence 5082	M83202
Sequence 5032	X72964	Sequence 5083	AF065388
Sequence 5033	L10678	Sequence 5084	AF042284

TABLE 8

Sequence 5085	X04665	Sequence 5137	L06175
Sequence 5086	M24594	Sequence 5138	U37519
Sequence 5087	L07393	Sequence 5139	AF013759
Sequence 5088	X74070	Sequence 5140	M30817
Sequence 5089	U07857	Sequence 5141	M31627
Sequence 5090	AF007791	Sequence 5142	L06133
Sequence 5091	AF176012	Sequence 5143	J04026
Sequence 5092	AF089747	Sequence 5144	M83822
Sequence 5093	M33146	Sequence 5145	E02488
Sequence 5094	AB014605	Sequence 5146	M73548
Sequence 5095	X93036	Sequence 5147	AF010233
Sequence 5096	Z35093	Sequence 5148	D86322
Sequence 5097	A26481	Sequence 5149	U42592
Sequence 5098	AB014595	Sequence 5150	AL110197
Sequence 5099	M64098	Sequence 5151	AB002332
Sequence 5100	U36221	Sequence 5152	J02611
Sequence 5101	S69272	Sequence 5153	A10416
Sequence 5102	L23805	Sequence 5154	X78121
Sequence 5103	M31126	Sequence 5155	X76732
Sequence 5104	L05186	Sequence 5156	U33760
Sequence 5105	M63573	Sequence 5157	L42572
Sequence 5106	U90904	Sequence 5158	U05237
Sequence 5107	J03817	Sequence 5159	J03460
Sequence 5108	AF147412	Sequence 5160	M13519
Sequence 5109	X74979	Sequence 5161	U33837
Sequence 5110	AB020685	Sequence 5162	U97144
Sequence 5111	U28249	Sequence 5163	M62403
Sequence 5112	M24194	Sequence 5164	AF036241
Sequence 5113	X52520	Sequence 5165	AF077202
Sequence 5114	AL049381	Sequence 5166	E06721
Sequence 5115	AF077045	Sequence 5167	U93205
Sequence 5116	D50929	Sequence 5168	U18728
Sequence 5117	AF041381	Sequence 5169	L05095
Sequence 5118	AF007170	Sequence 5170	AL080091
Sequence 5119	U19769	Sequence 5171	K01566
Sequence 5120	M96995	Sequence 5172	AB007893
Sequence 5121	AF035824	Sequence 5173	J04977
Sequence 5122	V00496	Sequence 5174	AF064092
Sequence 5123	M83653	Sequence 5175	M10036
Sequence 5124	AB018333	Sequence 5176	D49489
Sequence 5125	AF012281	Sequence 5177	AF070645
Sequence 5126	M19922	Sequence 5178	AB029000
Sequence 5127	D38524	Sequence 5179	M22920
Sequence 5128	D80005	Sequence 5180	M55621
Sequence 5129	D16234	Sequence 5181	M83248
Sequence 5130	M77830	Sequence 5182	AL117666
Sequence 5131	L20814	Sequence 5183	L37080
Sequence 5132	X13238	Sequence 5184	X52947
Sequence 5133	X95190	Sequence 5185	M88461
Sequence 5134	D90427	Sequence 5186	M26325
Sequence 5135	S82616	Sequence 5187	AF052113
Sequence 5136	AF100756	Sequence 5188	AF133425

TABLE 8

Sequence 5189	AF086390	Sequence 5241	AL050025
Sequence 5190	M19735	Sequence 5242	X02920
Sequence 5191	X63564	Sequence 5243	AF086555
Sequence 5192	AF125525	Sequence 5244	AF061258
Sequence 5193	M58485	Sequence 5245	D49387
Sequence 5194	M14483	Sequence 5246	L76687
Sequence 5195	M80899	Sequence 5247	D43951
Sequence 5196	M65188	Sequence 5248	D26485
Sequence 5197	AF111713	Sequence 5249	AB023232
Sequence 5198	U07806	Sequence 5250	AF038421
Sequence 5199	U41740	Sequence 5251	L40157
Sequence 5200	Y10351	Sequence 5252	AJ224677
Sequence 5201	AF044209	Sequence 5253	AJ001306
Sequence 5202	X95240	Sequence 5254	X99920
Sequence 5203	AF070561	Sequence 5255	X15187
Sequence 5204	K02403	Sequence 5256	X03558
Sequence 5205	AL050386	Sequence 5257	AJ224172
Sequence 5206	U41654	Sequence 5258	AF035313
Sequence 5207	AJ223353	Sequence 5259	AL109672
Sequence 5208	U32331	Sequence 5260	D13643
Sequence 5209	D89675	Sequence 5261	AB002326
Sequence 5210	X85233	Sequence 5262	AB033061
Sequence 5211	U41060	Sequence 5263	S68015
Sequence 5212	M29541	Sequence 5264	M31467
Sequence 5213	U03886	Sequence 5265	U02390
Sequence 5214	AF045167	Sequence 5266	U42593
Sequence 5215	AL096719	Sequence 5267	AF006010
Sequence 5216	AJ224866	Sequence 5268	L07615
Sequence 5217	L42542	Sequence 5269	X83618
Sequence 5218	X15256	Sequence 5270	AB005659
Sequence 5219	AL117413	Sequence 5271	AB028624
Sequence 5220	U75362	Sequence 5272	D50371
Sequence 5221	X94323	Sequence 5273	Z50749
Sequence 5222	D30756	Sequence 5274	AF132942
Sequence 5223	M11465	Sequence 5275	AB007947
Sequence 5224	AF155832	Sequence 5276	AF053304
Sequence 5225	M95627	Sequence 5277	M93107
Sequence 5226	V00478	Sequence 5278	L25085
Sequence 5227	AB011142	Sequence 5279	S67310
Sequence 5228	M69106	Sequence 5280	L06132
Sequence 5229	D63998	Sequence 5281	X75861
Sequence 5230	AF068846	Sequence 5282	U37518
Sequence 5231	AF042166	Sequence 5283	AL050179
Sequence 5232	L05779	Sequence 5284	AF021819
Sequence 5233	J05192	Sequence 5285	Y10043
Sequence 5234	U95847	Sequence 5286	E00631
Sequence 5235	AF102546	Sequence 5287	M16342
Sequence 5236	U50733	Sequence 5288	AF128527
Sequence 5237	AJ251053	Sequence 5289	X58072
Sequence 5238	D17137	Sequence 5290	AF026939
Sequence 5239	AF151840	Sequence 5291	AF054990
Sequence 5240	S70290	Sequence 5292	L10320

TABLE 8

Sequence 5293	D12981	Sequence 5345	M98452
Sequence 5294	E08764	Sequence 5346	AF176518
Sequence 5295	AB020694	Sequence 5347	M29540
Sequence 5296	D49547	Sequence 5348	M65131
Sequence 5297	AF041483	Sequence 5349	D00068
Sequence 5298	L19161	Sequence 5350	E01813
Sequence 5299	X53331	Sequence 5351	AF055033
Sequence 5300	M12670	Sequence 5352	AB002329
Sequence 5301	E01971	Sequence 5353	U88879
Sequence 5302	J00126	Sequence 5354	AL050363
Sequence 5303	J04164	Sequence 5355	D86326
Sequence 5304	AF052149	Sequence 5356	D38551
Sequence 5305	M29548	Sequence 5357	S35960
Sequence 5306	E03413	Sequence 5358	M64572
Sequence 5307	AF061016	Sequence 5359	L27560
Sequence 5308	D38583	Sequence 5360	X78627
Sequence 5309	AB014563	Sequence 5361	X03963
Sequence 5310	AF176013	Sequence 5362	AL080113
Sequence 5311	AF035316	Sequence 5363	L37385
Sequence 5312	E02628	Sequence 5364	AJ223352
Sequence 5313	U48251	Sequence 5365	AJ132440
Sequence 5314	AF201077	Sequence 5366	U69645
Sequence 5315	X78710	Sequence 5367	AF038954
Sequence 5316	AF015926	Sequence 5368	AB033080
Sequence 5317	AB022427	Sequence 5369	AL117406
Sequence 5318	U14971	Sequence 5370	D50525
Sequence 5319	U88966	Sequence 5371	AF083190
Sequence 5320	D29992	Sequence 5372	X55122
Sequence 5321	X56999	Sequence 5373	U26162
Sequence 5322	E02904	Sequence 5374	AF089750
Sequence 5323	AB032983	Sequence 5375	M75883
Sequence 5324	D87438	Sequence 5376	X63432
Sequence 5325	AF074606	Sequence 5377	J05213
Sequence 5326	AJ132583	Sequence 5378	Z22968
Sequence 5327	U90914	Sequence 5379	AF001893
Sequence 5328	J03015	Sequence 5380	AF086282
Sequence 5329	AF087942	Sequence 5381	U83115
Sequence 5330	M29366	Sequence 5382	M64241
Sequence 5331	U30888	Sequence 5383	X70476
Sequence 5332	U80213	Sequence 5384	S81585
Sequence 5333	E01797	Sequence 5385	M86917
Sequence 5334	S82081	Sequence 5386	X15505
Sequence 5335	AL050141	Sequence 5387	AF038452
Sequence 5336	J03634	Sequence 5388	AF077197
Sequence 5337	AF131738	Sequence 5389	AF087661
Sequence 5338	AB002387	Sequence 5390	L20941
Sequence 5339	AB023209	Sequence 5391	AJ010346
Sequence 5340	M30627	Sequence 5392	L19182
Sequence 5341	L35263	Sequence 5393	AF151884
Sequence 5342	X02761	Sequence 5394	S52450
Sequence 5343	J05459	Sequence 5395	U49352
Sequence 5344	U04441	Sequence 5396	D21092

TABLE 8

Sequence 5397	AF035319	Sequence 5449	AA418392
Sequence 5398	AF104921	Sequence 5450	H50843
Sequence 5399	Z11793	Sequence 5451	AI913414
Sequence 5400	X62078	Sequence 5452	AA338377
Sequence 5401	L40397	Sequence 5453	AI887664
Sequence 5402	J00186	Sequence 5454	AA152337
Sequence 5403	J05176	Sequence 5455	AA911134
Sequence 5404	AB007899	Sequence 5456	AI027915
Sequence 5405	X13923	Sequence 5457	AA558976
Sequence 5406	AL110269	Sequence 5458	AA315627
Sequence 5407	X06272	Sequence 5459	AA120820
Sequence 5408	AB004044	Sequence 5460	W72728
Sequence 5409	U42349	Sequence 5461	AA155828
Sequence 5410	M22632	Sequence 5462	AI262029
Sequence 5411	X85134	Sequence 5463	AA040624
Sequence 5412	U89326	Sequence 5464	AA340927
Sequence 5413	X72875	Sequence 5465	AI064967
Sequence 5414	AB033071	Sequence 5466	AA156336
Sequence 5415	AF034607	Sequence 5467	AI267622
Sequence 5416	AF065391	Sequence 5468	AA305861
Sequence 5417	AF028832	Sequence 5469	AI021993
Sequence 5418	U25997	Sequence 5470	AA573742
Sequence 5419	AF131781	Sequence 5471	AL119524
Sequence 5420	M22918	Sequence 5472	AI110821
Sequence 5421	X07362	Sequence 5473	AA526368
Sequence 5422	D45370	Sequence 5474	AA534543
Sequence 5423	U16997	Sequence 5475	AI907858
Sequence 5424	U42456	Sequence 5476	T18965
Sequence 5425	AF132940	Sequence 5477	AI307406
Sequence 5426	AB020689	Sequence 5478	AA460775
Sequence 5427	J03007	Sequence 5479	AA297615
Sequence 5428	D14696	Sequence 5480	AA037885
Sequence 5429	J03827	Sequence 5481	AW152550
Sequence 5430	AF095448	Sequence 5482	W33011
Sequence 5431	U68186	Sequence 5483	AI366882
Sequence 5432	X13694	Sequence 5484	N40131
Sequence 5433	D28759	Sequence 5485	AA314225
Sequence 5434	X00474	Sequence 5486	AA668911
Sequence 5435	X00570	Sequence 5487	AA195431
Sequence 5436	AB003102	Sequence 5488	AI187992
Sequence 5437	L16510	Sequence 5489	H05698
Sequence 5438	D87127	Sequence 5490	AW150827
Sequence 5439	AF070555	Sequence 5491	AI453338
Sequence 5440	M58549	Sequence 5492	AA447258
Sequence 5441	AF078776	Sequence 5493	AA845374
Sequence 5442	E01043	Sequence 5494	R72794
Sequence 5443	AF151893	Sequence 5495	AI567884
Sequence 5444	L07614	Sequence 5496	AA173756
Sequence 5445	AA327546	Sequence 5497	AI074030
Sequence 5446	AT000478	Sequence 5498	AA348614
Sequence 5447	AI752609	Sequence 5499	AW188590
Sequence 5448	AA507878	Sequence 5500	AA366233

TABLE 8

Sequence 5501	AI554378	Sequence 5553	R97676
Sequence 5502	AI810764	Sequence 5554	W87894
Sequence 5503	AA694242	Sequence 5555	AI084466
Sequence 5504	AA757249	Sequence 5556	AI860016
Sequence 5505	AW080940	Sequence 5557	N62984
Sequence 5506	AA586621	Sequence 5558	AA316874
Sequence 5507	AA446726	Sequence 5559	AA431381
Sequence 5508	R78585	Sequence 5560	AA992690
Sequence 5509	AL037917	Sequence 5561	AA995981
Sequence 5510	AL036415	Sequence 5562	AI689406
Sequence 5511	AA481220	Sequence 5563	AA983600
Sequence 5512	AA420789	Sequence 5564	T70484
Sequence 5513	AI267351	Sequence 5565	AA045111
Sequence 5514	AA236020	Sequence 5566	AA028906
Sequence 5515	AI302627	Sequence 5567	AI128061
Sequence 5516	AI056716	Sequence 5568	AA206504
Sequence 5517	AA442530	Sequence 5569	AA301884
Sequence 5518	AA554010	Sequence 5570	AA411452
Sequence 5519	AI133487	Sequence 5571	AA936427
Sequence 5520	AW026131	Sequence 5572	AW079863
Sequence 5521	AI026809	Sequence 5573	AI953099
Sequence 5522	AW138461	Sequence 5574	AI253366
Sequence 5523	AI144215	Sequence 5575	AI636728
Sequence 5524	AA532383	Sequence 5576	AA358397
Sequence 5525	AA093949	Sequence 5577	AI356022
Sequence 5526	AI811051	Sequence 5578	AA406595
Sequence 5527	AA775987	Sequence 5579	AA338019
Sequence 5528	AA225488	Sequence 5580	AI560870
Sequence 5529	AA630001	Sequence 5581	AI246688
Sequence 5530	AW013972	Sequence 5582	AI091839
Sequence 5531	AI207471	Sequence 5583	AI888095
Sequence 5532	AA835434	Sequence 5584	AI334437
Sequence 5533	AL036332	Sequence 5585	AA049181
Sequence 5534	AA344628	Sequence 5586	AA092185
Sequence 5535	AA307513	Sequence 5587	AI694634
Sequence 5536	AI570838	Sequence 5588	H93602
Sequence 5537	T93967	Sequence 5589	AI610228
Sequence 5538	AI272116	Sequence 5590	AA916110
Sequence 5539	AI872198	Sequence 5591	AA291971
Sequence 5540	AA354928	Sequence 5592	AA122379
Sequence 5541	AA680118	Sequence 5593	AA364830
Sequence 5542	W47611	Sequence 5594	AA428950
Sequence 5543	AA308400	Sequence 5595	AI262138
Sequence 5544	AI337901	Sequence 5596	AI362355
Sequence 5545	AA484821	Sequence 5597	AA779168
Sequence 5546	AI374670	Sequence 5598	AA864690
Sequence 5547	AI744245	Sequence 5599	AA622636
Sequence 5548	AI984763	Sequence 5600	AA622521
Sequence 5549	AA487683	Sequence 5601	W52493
Sequence 5550	AI018488	Sequence 5602	AW015415
Sequence 5551	H58018	Sequence 5603	AI267502
Sequence 5552	AA421496	Sequence 5604	Z39898

TABLE 8

Sequence 5605	AI089528	Sequence 5657	AA298593
Sequence 5606	AA393355	Sequence 5658	AI580419
Sequence 5607	AI126443	Sequence 5659	AI859619
Sequence 5608	AA304762	Sequence 5660	AA307247
Sequence 5609	AA677706	Sequence 5661	AA155913
Sequence 5610	AA070567	Sequence 5662	AA259255
Sequence 5611	AA948372	Sequence 5663	AI909330
Sequence 5612	R54784	Sequence 5664	AA662470
Sequence 5613	AA295348	Sequence 5665	AA707576
Sequence 5614	AI829827	Sequence 5666	AI686930
Sequence 5615	AA707750	Sequence 5667	AL043702
Sequence 5616	AI627480	Sequence 5668	AA635641
Sequence 5617	AI348421	Sequence 5669	AI791322
Sequence 5618	AI087888	Sequence 5670	T85006
Sequence 5619	AI381494	Sequence 5671	AI680313
Sequence 5620	AA487580	Sequence 5672	AA297432
Sequence 5621	AA404214	Sequence 5673	AA400813
Sequence 5622	AI217003	Sequence 5674	AI267569
Sequence 5623	AW003747	Sequence 5675	R71822
Sequence 5624	AI640638	Sequence 5676	AA485853
Sequence 5625	AI216969	Sequence 5677	AA262399
Sequence 5626	H27807	Sequence 5678	AA039972
Sequence 5627	AI040598	Sequence 5679	AA278804
Sequence 5628	AA365951	Sequence 5680	N59576
Sequence 5629	AA641867	Sequence 5681	AA143609
Sequence 5630	AI802528	Sequence 5682	AI174846
Sequence 5631	AI051792	Sequence 5683	AA934734
Sequence 5632	AA524966	Sequence 5684	AI078038
Sequence 5633	AA984569	Sequence 5685	H52045
Sequence 5634	AI879040	Sequence 5686	AA165148
Sequence 5635	AA044098	Sequence 5687	AI873959
Sequence 5636	AA868309	Sequence 5688	AA384584
Sequence 5637	AI473799	Sequence 5689	AI094433
Sequence 5638	H25648	Sequence 5690	AA828505
Sequence 5639	AA102397	Sequence 5691	AI676218
Sequence 5640	AW129112	Sequence 5692	AA371760
Sequence 5641	AL035802	Sequence 5693	N49706
Sequence 5642	W74125	Sequence 5694	AI631297
Sequence 5643	AA580280	Sequence 5695	AA064779
Sequence 5644	AA292011	Sequence 5696	AA371595
Sequence 5645	AA315049	Sequence 5697	AI002056
Sequence 5646	AI021922	Sequence 5698	AI267307
Sequence 5647	AA362778	Sequence 5699	AI768568
Sequence 5648	AA074676	Sequence 5700	AI358337
Sequence 5649	AA385326	Sequence 5701	AA588854
Sequence 5650	AW189037	Sequence 5702	R65899
Sequence 5651	AI820678	Sequence 5703	AA102280
Sequence 5652	AI473864	Sequence 5704	AI655603
Sequence 5653	AA345807	Sequence 5705	AI655893
Sequence 5654	AI951118	Sequence 5706	AA371964
Sequence 5655	AL044891	Sequence 5707	AL039550
Sequence 5656	H78895	Sequence 5708	AI817242

TABLE 8

Sequence 5709	AA557683	Sequence 5761	AI535656
Sequence 5710	AA334235	Sequence 5762	AA465258
Sequence 5711	R82390	Sequence 5763	AA272128
Sequence 5712	AA336332	Sequence 5764	N99795
Sequence 5713	AA100857	Sequence 5765	AA524479
Sequence 5714	AA287804	Sequence 5766	AA505700
Sequence 5715	AI023453	Sequence 5767	T87986
Sequence 5716	AA328046	Sequence 5768	AA987583
Sequence 5717	AA482228	Sequence 5769	H94875
Sequence 5718	AI014697	Sequence 5770	AI696748
Sequence 5719	AA410527	Sequence 5771	AA588848
Sequence 5720	AA507153	Sequence 5772	AA954939
Sequence 5721	AI273871	Sequence 5773	AA313487
Sequence 5722	AA121437	Sequence 5774	AI266582
Sequence 5723	AA586800	Sequence 5775	AI377925
Sequence 5724	AA296846	Sequence 5776	AA420727
Sequence 5725	AI752620	Sequence 5777	AI133489
Sequence 5726	AA083626	Sequence 5778	AW015349
Sequence 5727	AA423899	Sequence 5779	N91834
Sequence 5728	AA084923	Sequence 5780	W25732
Sequence 5729	AA335273	Sequence 5781	AA442666
Sequence 5730	AI557359	Sequence 5782	AI252283
Sequence 5731	AL042316	Sequence 5783	AI187009
Sequence 5732	AA169743	Sequence 5784	AA316705
Sequence 5733	AA521261	Sequence 5785	H97564
Sequence 5734	AA527188	Sequence 5786	AA344554
Sequence 5735	AI668594	Sequence 5787	AI752828
Sequence 5736	AA156784	Sequence 5788	AA748644
Sequence 5737	AA374373	Sequence 5789	AI791618
Sequence 5738	AA155926	Sequence 5790	AA873869
Sequence 5739	AA603219	Sequence 5791	AA653508
Sequence 5740	AA309546	Sequence 5792	AA393164
Sequence 5741	AA143616	Sequence 5793	AA723038
Sequence 5742	AA047054	Sequence 5794	AI829770
Sequence 5743	AL040758	Sequence 5795	AA836962
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Sequence 5745	AA866214	Sequence 5797	AI590021
Sequence 5746	AI648682	Sequence 5798	T78982
Sequence 5747	AI202659	Sequence 5799	AA040384
Sequence 5748	AA160656	Sequence 5800	AA639665
Sequence 5749	AI092436	Sequence 5801	AI042291
Sequence 5750	AA079854	Sequence 5802	AI811849
Sequence 5751	AI366015	Sequence 5803	AA169123
Sequence 5752	AA613300	Sequence 5804	AI811054
Sequence 5753	AA132733	Sequence 5805	AA209431
Sequence 5754	W72907	Sequence 5806	AA143790
Sequence 5755	AA398124	Sequence 5807	AI269893
Sequence 5756	AI902568	Sequence 5808	AI417884
Sequence 5757	AA337653	Sequence 5809	AI253436
Sequence 5758	AA315536	Sequence 5810	AW137203
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Sequence 5760	AI608864	Sequence 5812	AI207528

TABLE 8

Sequence 5813	AI431756	Sequence 5865	AI287516
Sequence 5814	AI701892	Sequence 5866	AW089920
Sequence 5815	AI267185	Sequence 5867	AI583065
Sequence 5816	T69208	Sequence 5868	AA211763
Sequence 5817	AI458995	Sequence 5869	R24312
Sequence 5818	AI973212	Sequence 5870	AF147766
Sequence 5819	R09061	Sequence 5871	AI445220
Sequence 5820	AA160316	Sequence 5872	AA344179
Sequence 5821	AA283844	Sequence 5873	AA332072
Sequence 5822	AI183698	Sequence 5874	AA643898
Sequence 5823	AI133687	Sequence 5875	AA242898
Sequence 5824	AA224124	Sequence 5876	AA295091
Sequence 5825	AA295863	Sequence 5877	AA112882
Sequence 5826	R71039	Sequence 5878	AA421562
Sequence 5827	R00022	Sequence 5879	AA100023
Sequence 5828	AA169701	Sequence 5880	AI767591
Sequence 5829	AA127185	Sequence 5881	AA126355
Sequence 5830	AA622501	Sequence 5882	AI860483
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Sequence 5832	AA100970	Sequence 5884	AA669133
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Sequence 5835	AI283760	Sequence 5887	AA143286
Sequence 5836	AL037828	Sequence 5888	H43275
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Sequence 5840	AA371077	Sequence 5892	AA052933
Sequence 5841	AA421803	Sequence 5893	AI267482
Sequence 5842	AA910272	Sequence 5894	AA159272
Sequence 5843	AI703142	Sequence 5895	AA810483
Sequence 5844	AA716150	Sequence 5896	AI022064
Sequence 5845	AF063537	Sequence 5897	AA033651
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Sequence 5847	AA470685	Sequence 5899	AA479752
Sequence 5848	AI990968	Sequence 5900	AI091312
Sequence 5849	AA782188	Sequence 5901	H25577
Sequence 5850	AI419550	Sequence 5902	AI267316
Sequence 5851	AA654906	Sequence 5903	AA580682
Sequence 5852	AA777342	Sequence 5904	AW023447
Sequence 5853	AI923978	Sequence 5905	AA180789
Sequence 5854	AA305143	Sequence 5906	R25549
Sequence 5855	AI252548	Sequence 5907	T94565
Sequence 5856	AA334706	Sequence 5908	AA928879
Sequence 5857	AA610476	Sequence 5909	AW165953
Sequence 5858	AW072783	Sequence 5910	AA313020
Sequence 5859	AI560241	Sequence 5911	AW084455
Sequence 5860	T29485	Sequence 5912	AI267454
Sequence 5861	T10966	Sequence 5913	AA084829
Sequence 5862	AI093004	Sequence 5914	AA010305
Sequence 5863	AI554077	Sequence 5915	AA233029
Sequence 5864	AA180074	Sequence 5916	AA552670

TABLE 8

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Sequence 5918	T68209	Sequence 5970	AA907388
Sequence 5919	AW081746	Sequence 5971	AI684122
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Sequence 5921	AI554633	Sequence 5973	AA136096
Sequence 5922	AI089394	Sequence 5974	AA018347
Sequence 5923	AA457625	Sequence 5975	AA313762
Sequence 5924	AW015828	Sequence 5976	H17742
Sequence 5925	AA552321	Sequence 5977	T67740
Sequence 5926	AI820995	Sequence 5978	AI905028
Sequence 5927	AA932409	Sequence 5979	AI525843
Sequence 5928	H10974	Sequence 5980	AA384635
Sequence 5929	AI348024	Sequence 5981	AA514776
Sequence 5930	AA372795	Sequence 5982	AVW205207
Sequence 5931	AA352014	Sequence 5983	AA194666
Sequence 5932	AA740722	Sequence 5984	AI371263
Sequence 5933	AA655034	Sequence 5985	AI217019
Sequence 5934	AA057290	Sequence 5986	AA132005
Sequence 5935	AI445406	Sequence 5987	AI341291
Sequence 5936	AA161042	Sequence 5988	AA235498
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Sequence 5939	W90128	Sequence 5991	AA559906
Sequence 5940	AI949077	Sequence 5992	AI905739
Sequence 5941	AA572703	Sequence 5993	AA419028
Sequence 5942	AA319742	Sequence 5994	T73477
Sequence 5943	AA604675	Sequence 5995	AA625485
Sequence 5944	AW167602	Sequence 5996	AL035985
Sequence 5945	AA315662	Sequence 5997	H87900
Sequence 5946	AA024401	Sequence 5998	R42206
Sequence 5947	AA384739	Sequence 5999	AA216387
Sequence 5948	AA196569	Sequence 6000	AA019926
Sequence 5949	W81706	Sequence 6001	AA483882
Sequence 5950	AA626503	Sequence 6002	AA039443
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Sequence 5958	AA503137	Sequence 6010	AA541785
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Sequence 5962	AA157788	Sequence 6014	AA205679
Sequence 5963	AA557939	Sequence 6015	AI291489
Sequence 5964	AA378449	Sequence 6016	AA057544
Sequence 5965	H17249	Sequence 6017	AA507610
Sequence 5966	AA101471	Sequence 6018	AA147769
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Sequence 5968	AI436687	Sequence 6020	AI366549

TABLE 8

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Sequence 6030	W79387	Sequence 6082	AA532852
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Sequence 6034	AI610402	Sequence 6086	AI066601
Sequence 6035	AA227099	Sequence 6087	AA604368
Sequence 6036	AI333708	Sequence 6088	AA503377
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Sequence 6038	AA099093	Sequence 6090	AI479275
Sequence 6039	R26983	Sequence 6091	AI972286
Sequence 6040	AA029584	Sequence 6092	AI480118
Sequence 6041	AI281282	Sequence 6093	N49443
Sequence 6042	AI267162	Sequence 6094	T17254
Sequence 6043	AA088619	Sequence 6095	AI479200
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Sequence 6047	AA451633	Sequence 6099	AW070539
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Sequence 6058	AA307884	Sequence 6110	AA587236
Sequence 6059	AA622524	Sequence 6111	AA400689
Sequence 6060	AA429190	Sequence 6112	AA287159
Sequence 6061	AA962830	Sequence 6113	AA091398
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Sequence 6063	AI916352	Sequence 6115	AL040975
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Sequence 6069	AI280699	Sequence 6121	AI627719
Sequence 6070	AW044451	Sequence 6122	AA507595
Sequence 6071	W74302	Sequence 6123	H08511
Sequence 6072	T31801	Sequence 6124	AA429320

TABLE 8

Sequence 6125	AA513632	Sequence 6177	AI905025
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Sequence 6127	AI393563	Sequence 6179	AI820662
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Sequence 6140	AI634251	Sequence 6192	AA146792
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Sequence 6143	AA398686	Sequence 6195	AI743578
Sequence 6144	AI310312	Sequence 6196	AI376676
Sequence 6145	AI929283	Sequence 6197	AW068451
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Sequence 6150	AA664473	Sequence 6202	AI870172
Sequence 6151	N27886	Sequence 6203	N35421
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Sequence 6153	AA463638	Sequence 6205	H17995
Sequence 6154	AW175947	Sequence 6206	AA572675
Sequence 6155	AA086463	Sequence 6207	AA507383
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Sequence 6172	AA773211	Sequence 6224	AI683214
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Sequence 6176	AA099976	Sequence 6228	AI357774

TABLE 8

Sequence 6229	AI023176	Sequence 6281	AA029881
Sequence 6230	AA384322	Sequence 6282	AI018522
Sequence 6231	AW175806	Sequence 6283	AI911493
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Sequence 6235	AA210703	Sequence 6287	AA310739
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Sequence 6241	AA314146	Sequence 6293	W27249
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Sequence 6243	AI392890	Sequence 6295	AI366381
Sequence 6244	T61688	Sequence 6296	AL044350
Sequence 6245	AA316115	Sequence 6297	AA932839
Sequence 6246	R19240	Sequence 6298	AA552443
Sequence 6247	AI359502	Sequence 6299	W39498
Sequence 6248	AA186825	Sequence 6300	AA425250
Sequence 6249	AI034312	Sequence 6301	AA422022
Sequence 6250	AA134283	Sequence 6302	AI636701
Sequence 6251	AA403072	Sequence 6303	AA706932
Sequence 6252	AI572043	Sequence 6304	AA046666
Sequence 6253	AA219434	Sequence 6305	AI267573
Sequence 6254	AA984156	Sequence 6306	AI144260
Sequence 6255	AA165027	Sequence 6307	AA909582
Sequence 6256	AW166442	Sequence 6308	AA759250
Sequence 6257	AA768908	Sequence 6309	AA448758
Sequence 6258	AA040240	Sequence 6310	AA948037
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Sequence 6260	R60271	Sequence 6312	AA577045
Sequence 6261	AA056703	Sequence 6313	AA480512
Sequence 6262	AA293838	Sequence 6314	AA293759
Sequence 6263	AA916848	Sequence 6315	AA094402
Sequence 6264	H54240	Sequence 6316	AI280378
Sequence 6265	AA768348	Sequence 6317	AI088004
Sequence 6266	AI276361	Sequence 6318	AI753830
Sequence 6267	AW073310	Sequence 6319	AA482432
Sequence 6268	T96872	Sequence 6320	AW150869
Sequence 6269	AA626274	Sequence 6321	AI740563
Sequence 6270	AA610193	Sequence 6322	H97487
Sequence 6271	N23798	Sequence 6323	T62059
Sequence 6272	AA644559	Sequence 6324	AA994633
Sequence 6273	AA393368	Sequence 6325	AI631862
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Sequence 6276	AW167984	Sequence 6328	AI824013
Sequence 6277	AA781512	Sequence 6329	AA398043
Sequence 6278	AL038068	Sequence 6330	W81242
Sequence 6279	AA156261	Sequence 6331	AA345906
Sequence 6280	AA357592	Sequence 6332	AW170035

TABLE 8

Sequence 6333	AA503923	Sequence 6385	T51615
Sequence 6334	AA626718	Sequence 6386	AA315613
Sequence 6335	AA644174	Sequence 6387	AA032220
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Sequence 6337	AA358790	Sequence 6389	AI590351
Sequence 6338	AI366208	Sequence 6390	W52418
Sequence 6339	AA318395	Sequence 6391	AA339378
Sequence 6340	AI056974	Sequence 6392	AI031985
Sequence 6341	AI253087	Sequence 6393	AI800922
Sequence 6342	AI580292	Sequence 6394	AA464768
Sequence 6343	AA468297	Sequence 6395	AA991451
Sequence 6344	N91073	Sequence 6396	AI142540
Sequence 6345	AA307697	Sequence 6397	AI638398
Sequence 6346	AI568937	Sequence 6398	H67577
Sequence 6347	AA468125	Sequence 6399	AL040084
Sequence 6348	AA176269	Sequence 6400	AI658720
Sequence 6349	AA303168	Sequence 6401	AL118659
Sequence 6350	AA565996	Sequence 6402	AA769347
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Sequence 6357	AA088770	Sequence 6409	AI655499
Sequence 6358	AI953789	Sequence 6410	AI128073
Sequence 6359	AA526347	Sequence 6411	AA573212
Sequence 6360	AL042372	Sequence 6412	AL047749
Sequence 6361	AI816499	Sequence 6413	AI814513
Sequence 6362	AA476816	Sequence 6414	AW003692
Sequence 6363	AI198740	Sequence 6415	T53940
Sequence 6364	AA994244	Sequence 6416	AA099739
Sequence 6365	AA829461	Sequence 6417	AA018420
Sequence 6366	AI056669	Sequence 6418	AA297402
Sequence 6367	AA564296	Sequence 6419	AA557785
Sequence 6368	AA583529	Sequence 6420	AI110755
Sequence 6369	AA418108	Sequence 6421	AA573797
Sequence 6370	AA972994	Sequence 6422	AI916533
Sequence 6371	AI417583	Sequence 6423	AA062551
Sequence 6372	D54498	Sequence 6424	W52632
Sequence 6373	AI049846	Sequence 6425	AA492143
Sequence 6374	AI801893	Sequence 6426	AA781124
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Sequence 6376	AA134545	Sequence 6428	AI984229
Sequence 6377	AA515736	Sequence 6429	AA483400
Sequence 6378	AA227905	Sequence 6430	AA021343
Sequence 6379	AA311653	Sequence 6431	AA046779
Sequence 6380	AA363435	Sequence 6432	AA243858
Sequence 6381	AA634021	Sequence 6433	AA845576
Sequence 6382	AA398256	Sequence 6434	AI349614
Sequence 6383	AA570171	Sequence 6435	AI364580
Sequence 6384	AI650528	Sequence 6436	AI808092

TABLE 8

Sequence 6437	AA634469	Sequence 6486	AA633488
Sequence 6438	AA115297	Sequence 6487	AA652746
Sequence 6439	AA478642	Sequence 6488	AA468623
Sequence 6440	AA165082	Sequence 6489	AA728913
Sequence 6441	AA873362	Sequence 6490	AI547306
Sequence 6442	AA876375	Sequence 6491	AA307396
Sequence 6443	AI143160	Sequence 6492	AI147214
Sequence 6444	H16276	Sequence 6493	AA298786
Sequence 6445	AA552539	Sequence 6494	AI885273
Sequence 6446	AA582093	Sequence 6495	AA224487
Sequence 6447	AI127772	Sequence 6496	AA236418
Sequence 6448	AI809962	Sequence 6497	AA994857
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Sequence 6450	AA243332	Sequence 6499	AW015055
Sequence 6451	AA526498	Sequence 6500	AA805433
Sequence 6452	AI432038	Sequence 6501	AA470471
Sequence 6453	AA375816	Sequence 6502	Q36617
Sequence 6454	X84712	Sequence 6503	Q61566
Sequence 6455	AI301060	Sequence 6504	X84201
Sequence 6456	AA054556	Sequence 6505	Q51026
Sequence 6457	H26328	Sequence 6506	X84207
Sequence 6458	AA367039	Sequence 6507	V44294
Sequence 6459	AI127076	Sequence 6508	X37319
Sequence 6460	AI952920	Sequence 6509	Z16704
Sequence 6461	AA507550	Sequence 6510	V99312
Sequence 6462	AA948007	Sequence 6511	Q40769
Sequence 6463	T28300	Sequence 6512	T02797
Sequence 6464	AI720413	Sequence 6513	X37398
Sequence 6465	AA513640	Sequence 6514	V23109
Sequence 6466	AA143598	Sequence 6515	V04202
Sequence 6467	AI004210	Sequence 6516	X40372
Sequence 6468	AI692424	Sequence 6517	V04699
Sequence 6469	AA972730	Sequence 6518	Z00047
Sequence 6470	AA631694	Sequence 6519	X52246
Sequence 6471	AA337338	Sequence 6520	X40654
Sequence 6472	AI685222	Sequence 6521	X98275
Sequence 6473	AI092205	Sequence 6522	V84545
Sequence 6474	AI313352	Sequence 6523	V68996
Sequence 6475	AI859227	Sequence 6524	Z20412
Sequence 6476	AI201079	Sequence 6525	V68935
Sequence 6477	AI125255	Sequence 6526	V87766
Sequence 6478	AA492578	Sequence 6527	X25445
Sequence 6479	AA927847	Sequence 6528	V60015
Sequence 6480	AA296666	Sequence 6529	Z33598
Sequence 6481	AI264047	Sequence 6530	V68992
Sequence 6482	AA040910	Sequence 6531	Z27258
Sequence 6483	AI114777	Sequence 6532	V09023
Sequence 6484	AA040185	Sequence 6533	X97790
Sequence 6485	AI978964		

TABLE 8

Sequence 6534: found in patent publication WO99/53040

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TCTCAGGCAGAGTGCAGGCTCGACGGCTTATACTTTGGGAACGACATCTTGCGGAACC
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Sequence 6535: found in patent publication WO99/54461

CTNCTATAGGGCGAATTGGAGCTCCCCGCGGTGGCGGCCGCCCGGGCAGGTACGCGGGAG
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Sequence 6536: found in patent publication WO99/63088

CCGCGGTGGCGGCCGAGGTACGCGGGAAGATGTAGCTGTGTAGTCTCCTTCCATAGCTGC
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Sequence 6537: found in patent publication WO99/54446

CAGCTACAGATAAGGCCTCGCAAAGTTGGCCTCAGAGACACATCAGGAACCAAGGTGGAC
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Sequence 6538: found in patent publication WO99/32502

CGAGGTACATGACTGATATTACACCTCAAGGTGTGGCTATGAGAGCTGGAGTTCTGGCTG
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ACAAGCGTCATGTTGAGCAGAAGATCAATTCAAAAGAGAAACAGCCAGTTTGAACTGTT
ACCCACACAGCCCCGAATTGTGGGAGATGAAGAAAGGAAGCAATGGCTATGGTTTCTATC
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CCAGAGGAGGCTTGCTTTG

Sequence 6539: found in patent publication WO99/53051

CGCGGTGGCAGCAATCCTGGCCAAAGAGAGAGTTCTGAGAAAGTGAAGCTGACCTCA
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Sequence 6540: found in patent publication WO99/57132

CCGCGGTGGCGGCCGCCCGGGCAGGTACTGATAGACCAAAGCAGTGATCACAGGCAGTAG
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Table 9

Sequence #	Accession#	Sequence 50	AA152073
Sequence 1	AA704128	Sequence 51	AI128232
Sequence 2	AA331946	Sequence 52	AA345757
Sequence 3	AA709383	Sequence 53	AA523385
Sequence 4	AL048446	Sequence 54	AI110783
Sequence 5	AI755142	Sequence 55	AA232575
Sequence 6	AA039902	Sequence 56	C17084
Sequence 7	AI751785	Sequence 57	AA600826
Sequence 8	AA669052	Sequence 58	N23782
Sequence 9	AA604602	Sequence 59	AA308274
Sequence 10	AA203500	Sequence 60	AI751555
Sequence 11	AA736440	Sequence 61	AA398992
Sequence 12	AA778841	Sequence 62	AA788694
Sequence 13	AW087194	Sequence 63	AA552228
Sequence 14	AI132966	Sequence 64	AA583055
Sequence 15	AA715541	Sequence 65	AA578583
Sequence 16	AA311044	Sequence 66	AI754681
Sequence 17	AA887058	Sequence 67	H08043
Sequence 18	Z21669	Sequence 68	AA664849
Sequence 19	AI033304	Sequence 69	D58142
Sequence 20	AA773932	Sequence 70	AA102183
Sequence 21	AA070615	Sequence 71	AW023974
Sequence 22	AA075415	Sequence 72	AA886718
Sequence 23	AA186574	Sequence 73	AA031546
Sequence 24	AA042853	Sequence 74	H48018
Sequence 25	AI744219	Sequence 75	AA301897
Sequence 26	AA082572	Sequence 76	AA039259
Sequence 27	N42722	Sequence 77	AA037290
Sequence 28	AA308805	Sequence 78	AA451928
Sequence 29	AA031764	Sequence 79	AA147833
Sequence 30	AA449862	Sequence 80	AA406393
Sequence 31	AA788710	Sequence 81	R58560
Sequence 32	AA451821	Sequence 82	AL047035
Sequence 33	AI123697	Sequence 83	AA650303
Sequence 34	AA248703	Sequence 84	AI751220
Sequence 35	AA694215	Sequence 85	AA552596
Sequence 36	AA146899	Sequence 86	AA192483
Sequence 37	AA147585	Sequence 87	AI394305
Sequence 38	AA152204	Sequence 88	AA555160
Sequence 39	AA173829	Sequence 89	R78964
Sequence 40	N45416	Sequence 90	AA508592
Sequence 41	AI079882	Sequence 91	AA483177
Sequence 42	AW026089	Sequence 92	AI278640
Sequence 43	AA446179	Sequence 93	AA442803
Sequence 44	AA161343	Sequence 94	Z78377
Sequence 45	AI750827	Sequence 95	AA082805
Sequence 46	D79054	Sequence 96	AA312287
Sequence 47	AA610472	Sequence 97	AA639174
Sequence 48	AA648092	Sequence 98	AA778383
Sequence 49	AA487845	Sequence 99	AA704151
		Sequence 100	AA984202

Table 9

Sequence 101	AI750332	Sequence 152	AI752005
Sequence 102	AA446505	Sequence 153	AI754447
Sequence 103	AI150910	Sequence 154	AA082576
Sequence 104	AA573838	Sequence 155	AA305494
Sequence 105	AI358338	Sequence 156	AA339718
Sequence 106	AA160053	Sequence 157	H93127
Sequence 107	AA631152	Sequence 158	AA703938
Sequence 108	AW062558	Sequence 159	AW084608
Sequence 109	AI041974	Sequence 160	AL041915
Sequence 110	AA131455	Sequence 161	AA044574
Sequence 111	AA179921	Sequence 162	AI040034
Sequence 112	AW068618	Sequence 163	AA780908
Sequence 113	AA378000	Sequence 164	AI913196
Sequence 114	AI079577	Sequence 165	AI017341
Sequence 115	AA545771	Sequence 166	AA292265
Sequence 116	AL042809	Sequence 167	AA081204
Sequence 117	AA303709	Sequence 168	AI459383
Sequence 118	AA022748	Sequence 169	AA025156
Sequence 119	AI630038	Sequence 170	AA213468
Sequence 120	AW020397	Sequence 171	AA564681
Sequence 121	AI795908	Sequence 172	AA557124
Sequence 122	AI676202	Sequence 173	W46197
Sequence 123	AA070516	Sequence 174	AA253098
Sequence 124	AA704000	Sequence 175	AA022596
Sequence 125	AA332035	Sequence 176	AA187564
Sequence 126	AA481432	Sequence 177	AA648579
Sequence 127	AA564636	Sequence 178	AA157776
Sequence 128	AI275042	Sequence 179	AL037531
Sequence 129	AA293864	Sequence 180	AA765363
Sequence 130	AA083405	Sequence 181	AA151468
Sequence 131	AA129240	Sequence 182	AA376374
Sequence 132	AI815640	Sequence 183	AA342989
Sequence 133	AA564659	Sequence 184	AA128589
Sequence 134	AA037736	Sequence 185	AI018625
Sequence 135	AA047110	Sequence 186	AA293867
Sequence 136	AI078167	Sequence 187	AL040084
Sequence 137	AA112649	Sequence 188	AA463238
Sequence 138	AA649933	Sequence 189	AA173657
Sequence 139	AA308845	Sequence 190	AW138445
Sequence 140	AI750838	Sequence 191	AA366354
Sequence 141	AI400880	Sequence 192	AI808392
Sequence 142	AA147887	Sequence 193	AA779868
Sequence 143	AA303932	Sequence 194	AA218775
Sequence 144	N80420	Sequence 195	AA442280
Sequence 145	AA071169	Sequence 196	AA076567
Sequence 146	AA070081	Sequence 197	AA480299
Sequence 147	AA165604	Sequence 198	W45394
Sequence 148	N23307	Sequence 199	AA373376
Sequence 149	AI754916	Sequence 200	AA041526
Sequence 150	W00480	Sequence 201	AA147894
Sequence 151	AA069676	Sequence 202	AA514999

Table 9

Sequence 203	AA102120	Sequence 254	AA247768
Sequence 204	AW058418	Sequence 255	W44358
Sequence 205	AA010582	Sequence 256	AL046505
Sequence 206	AF063517	Sequence 257	AA188190
Sequence 207	AA280527	Sequence 258	AA314627
Sequence 208	AA102767	Sequence 259	AI052170
Sequence 209	AA136482	Sequence 260	AI142867
Sequence 210	AA182446	Sequence 261	AA295843
Sequence 211	AA074716	Sequence 262	AI752167
Sequence 212	AA642453	Sequence 263	AA213902
Sequence 213	AA179943	Sequence 264	AA448991
Sequence 214	AA858418	Sequence 265	AA076538
Sequence 215	AA037347	Sequence 266	AA037178
Sequence 216	AI262380	Sequence 267	AA486770
Sequence 217	AA082093	Sequence 268	AA083645
Sequence 218	AA329529	Sequence 269	AI684170
Sequence 219	N71242	Sequence 270	AA376034
Sequence 220	C00229	Sequence 271	AA082314
Sequence 221	AI927755	Sequence 272	AA133983
Sequence 222	AA305968	Sequence 273	AI753090
Sequence 223	AA155772	Sequence 274	AA305969
Sequence 224	AA627871	Sequence 275	AA100764
Sequence 225	AI741704	Sequence 276	AW131116
Sequence 226	AA070594	Sequence 277	AA334118
Sequence 227	AI815791	Sequence 278	AA069552
Sequence 228	AL043753	Sequence 279	AA304447
Sequence 229	AA314784	Sequence 280	AI697295
Sequence 230	R22336	Sequence 281	AA291400
Sequence 231	AL047980	Sequence 282	AI271552
Sequence 232	AI751046	Sequence 283	AI751618
Sequence 233	AW190211	Sequence 284	AA336951
Sequence 234	AA315996	Sequence 285	AI114556
Sequence 235	AA189124	Sequence 286	AA373365
Sequence 236	AA022992	Sequence 287	AA788933
Sequence 237	AA516043	Sequence 288	AA705508
Sequence 238	AA876057	Sequence 289	AA640931
Sequence 239	AA298582	Sequence 290	AA669133
Sequence 240	AA767234	Sequence 291	AA057599
Sequence 241	AA630286	Sequence 292	AA485495
Sequence 242	AA293124	Sequence 293	AA367947
Sequence 243	AA604352	Sequence 294	AA458613
Sequence 244	AA179450	Sequence 295	AA568957
Sequence 245	AA147777	Sequence 296	H54576
Sequence 246	AA664425	Sequence 297	AA056358
Sequence 247	AA587110	Sequence 298	AA463426
Sequence 248	AA062957	Sequence 299	AA398581
Sequence 249	AA025562	Sequence 300	AI185804
Sequence 250	H52575	Sequence 301	AA234360
Sequence 251	H08531	Sequence 302	AW020650
Sequence 252	AA442263	Sequence 303	AA355196
Sequence 253	AA573799	Sequence 304	AA703907

Table 9

Sequence 305	AA316071	Sequence 356	C17716
Sequence 306	AA054776	Sequence 357	AA545758
Sequence 307	AA256715	Sequence 358	AA310001
Sequence 308	AA341608	Sequence 359	AA599724
Sequence 309	AA436486	Sequence 360	AA121145
Sequence 310	AA398033	Sequence 361	AI749171
Sequence 311	AA488403	Sequence 362	AA522686
Sequence 312	AA046572	Sequence 363	AA386011
Sequence 313	AA586744	Sequence 364	AA131227
Sequence 314	AA928492	Sequence 365	AA444099
Sequence 315	AA765228	Sequence 366	AA099976
Sequence 316	AA309944	Sequence 367	AA263070
Sequence 317	AI190285	Sequence 368	AA187386
Sequence 318	AA486015	Sequence 369	AI750854
Sequence 319	AI879344	Sequence 370	AI341295
Sequence 320	AL039924	Sequence 371	W00346
Sequence 321	AA350768	Sequence 372	AA599454
Sequence 322	AA629076	Sequence 373	AA452189
Sequence 323	AA004720	Sequence 374	AA421248
Sequence 324	AA633901	Sequence 375	AA679328
Sequence 325	R70995	Sequence 376	AA167808
Sequence 326	AI080314	Sequence 377	AI089452
Sequence 327	W76437	Sequence 378	AA311028
Sequence 328	AI929672	Sequence 379	AA481979
Sequence 329	AA326962	Sequence 380	R25847
Sequence 330	H77539	Sequence 381	AA026215
Sequence 331	AI052690	Sequence 382	AA164698
Sequence 332	AA444383	Sequence 383	AA156607
Sequence 333	AI750879	Sequence 384	AA865218
Sequence 334	AA232319	Sequence 385	AI370992
Sequence 335	H85516	Sequence 386	AA534826
Sequence 336	AA188875	Sequence 387	AI636488
Sequence 337	AA301679	Sequence 388	AA319726
Sequence 338	AA102772	Sequence 389	AA160493
Sequence 339	AA479287	Sequence 390	AA553483
Sequence 340	AA046245	Sequence 391	AA699463
Sequence 341	AA554733	Sequence 392	AA875996
Sequence 342	AI038258	Sequence 393	AI753666
Sequence 343	AA044085	Sequence 394	AA173157
Sequence 344	AA558450	Sequence 395	AA233232
Sequence 345	AA579591	Sequence 396	AA071286
Sequence 346	AA633280	Sequence 397	AA363582
Sequence 347	AA058967	Sequence 398	AA315030
Sequence 348	AA128518	Sequence 399	AA150713
Sequence 349	AW005829	Sequence 400	AL042517
Sequence 350	AA333390	Sequence 401	AA358940
Sequence 351	AA394288	Sequence 402	AL079971
Sequence 352	AA122401	Sequence 403	AA134100
Sequence 353	AA149686	Sequence 404	AA488848
Sequence 354	AA007606	Sequence 405	AL040676
Sequence 355	AA244377	Sequence 406	AA351232

Table 9

Sequence 407	AA662532	Sequence 458	AI807462
Sequence 408	AA443398	Sequence 459	AA558460
Sequence 409	AA373734	Sequence 460	AI079435
Sequence 410	AI342424	Sequence 461	AI815554
Sequence 411	AA432073	Sequence 462	AA306779
Sequence 412	N44949	Sequence 463	AA082101
Sequence 413	AA132297	Sequence 464	AA088505
Sequence 414	R62235	Sequence 465	AA554016
Sequence 415	AW178825	Sequence 466	AI052317
Sequence 416	AI761085	Sequence 467	AA127185
Sequence 417	AA291583	Sequence 468	AA634876
Sequence 418	AI222806	Sequence 469	AA428408
Sequence 419	AA477967	Sequence 470	AA130001
Sequence 420	AI339765	Sequence 471	C05929
Sequence 421	AA301665	Sequence 472	AA122112
Sequence 422	AI267185	Sequence 473	AA427835
Sequence 423	AA375366	Sequence 474	AL043277
Sequence 424	AI244970	Sequence 475	AA383260
Sequence 425	AI038312	Sequence 476	AA129310
Sequence 426	AA037374	Sequence 477	AA039354
Sequence 427	AA209497	Sequence 478	AA279047
Sequence 428	AA853130	Sequence 479	AI751498
Sequence 429	AA360575	Sequence 480	AI471478
Sequence 430	AI751488	Sequence 481	AI077905
Sequence 431	AA383074	Sequence 482	AA649992
Sequence 432	AI690374	Sequence 483	AA319538
Sequence 433	AA044586	Sequence 484	AA166707
Sequence 434	AA853501	Sequence 485	AA133102
Sequence 435	AA029163	Sequence 486	AI264924
Sequence 436	AI750806	Sequence 487	AA088368
Sequence 437	AI743668	Sequence 488	AL118999
Sequence 438	AI610402	Sequence 489	AA496505
Sequence 439	AA451947	Sequence 490	F12165
Sequence 440	H38017	Sequence 491	AA252345
Sequence 441	AL079950	Sequence 492	AW179074
Sequence 442	AA064890	Sequence 493	AA317963
Sequence 443	AA047587	Sequence 494	AA081426
Sequence 444	AA417772	Sequence 495	AA852160
Sequence 445	AA037283	Sequence 496	AA614015
Sequence 446	AA516059	Sequence 497	AA045993
Sequence 447	AI824121	Sequence 498	D79026
Sequence 448	AA853833	Sequence 499	AA622005
Sequence 449	AI753507	Sequence 500	AA092804
Sequence 450	AI128986	Sequence 501	AA181968
Sequence 451	AA375384	Sequence 502	AA522879
Sequence 452	AA160751	Sequence 503	AA075781
Sequence 453	AA307854	Sequence 504	AA465494
Sequence 454	AI764962	Sequence 505	AA554920
Sequence 455	AA853532	Sequence 506	AA099452
Sequence 456	AA361332	Sequence 507	AI084654
Sequence 457	AA314770	Sequence 508	AA090795

Table 9

Sequence 509	AA186939	Sequence 560	AI681959
Sequence 510	AA179456	Sequence 561	AA187627
Sequence 511	AA480182	Sequence 562	AI090003
Sequence 512	AI340529	Sequence 563	AA375853
Sequence 513	AI207488	Sequence 564	AA286872
Sequence 514	N45373	Sequence 565	AA447935
Sequence 515	AA852893	Sequence 566	X84716
Sequence 516	AA368884	Sequence 567	AA203251
Sequence 517	AI188765	Sequence 568	AA224507
Sequence 518	AI356625	Sequence 569	AA449083
Sequence 519	AA482724	Sequence 570	AI000202
Sequence 520	AA411438	Sequence 571	AI557645
Sequence 521	AI570578	Sequence 572	AA308288
Sequence 522	AA053650	Sequence 573	M77886
Sequence 523	AA888156	Sequence 574	AA329707
Sequence 524	AI304857	Sequence 575	AA112851
Sequence 525	AI017336	Sequence 576	AA451952
Sequence 526	AA043921	Sequence 577	AA058479
Sequence 527	AI754050	Sequence 578	AA041467
Sequence 528	AI636207	Sequence 579	AA293450
Sequence 529	AA315237	Sequence 580	AI751956
Sequence 530	AI435429	Sequence 581	AA634086
Sequence 531	AA483067	Sequence 582	AA419370
Sequence 532	AA425549	Sequence 583	AA046846
Sequence 533	AA301628	Sequence 584	AI814177
Sequence 534	AI827429	Sequence 585	AA404646
Sequence 535	AA359893	Sequence 586	AI363480
Sequence 536	AA318379	Sequence 587	AA701870
Sequence 537	AA302191	Sequence 588	AA329872
Sequence 538	D52592	Sequence 589	AI750360
Sequence 539	AA334698	Sequence 590	AA373617
Sequence 540	AA075136	Sequence 591	AA054151
Sequence 541	AA542939	Sequence 592	AA169157
Sequence 542	AA373516	Sequence 593	AA490172
Sequence 543	AI570057	Sequence 594	AA196501
Sequence 544	AA331219	Sequence 595	AA970433
Sequence 545	AA039810	Sequence 596	AL036073
Sequence 546	AL037610	Sequence 597	AI694764
Sequence 547	AI569859	Sequence 598	AA255837
Sequence 548	AA405912	Sequence 599	W42888
Sequence 549	AA493355	Sequence 600	AI750830
Sequence 550	AA772071	Sequence 601	AA307657
Sequence 551	AA309847	Sequence 602	AW175607
Sequence 552	AA037281	Sequence 603	T63450
Sequence 553	AI356838	Sequence 604	AA112869
Sequence 554	AA524485	Sequence 605	AI493245
Sequence 555	AA188157	Sequence 606	AA334279
Sequence 556	AA308507	Sequence 607	AI983428
Sequence 557	AA149552	Sequence 608	AI760711
Sequence 558	AA593699	Sequence 609	AA852527
Sequence 559	H39934	Sequence 610	AA328696

Table 9

Sequence 611	AA191369	Sequence 662	AI758869
Sequence 612	AA743942	Sequence 663	AA115571
Sequence 613	AA010305	Sequence 664	AI142138
Sequence 614	AI042074	Sequence 665	AI084794
Sequence 615	AA127675	Sequence 666	AI634339
Sequence 616	AI081456	Sequence 667	AA909231
Sequence 617	AA744761	Sequence 668	AI126663
Sequence 618	AA304332	Sequence 669	AI753977
Sequence 619	AA364833	Sequence 670	AI346653
Sequence 620	AA075663	Sequence 671	AI042188
Sequence 621	AA373597	Sequence 672	AA063373
Sequence 622	AA251627	Sequence 673	AA169561
Sequence 623	AA176374	Sequence 674	AA545790
Sequence 624	AA766219	Sequence 675	AL043907
Sequence 625	AA179603	Sequence 676	AW160399
Sequence 626	W60773	Sequence 677	AW001499
Sequence 627	AA384855	Sequence 678	AI952631
Sequence 628	AA329969	Sequence 679	AI798679
Sequence 629	AA143152	Sequence 680	AA116051
Sequence 630	AA573817	Sequence 681	AA545736
Sequence 631	AA256330	Sequence 682	AI376460
Sequence 632	AI804766	Sequence 683	AA496308
Sequence 633	AA040037	Sequence 684	AL121433
Sequence 634	W52266	Sequence 685	AA789052
Sequence 635	AA095650	Sequence 686	AA191422
Sequence 636	AA283810	Sequence 687	AA031550
Sequence 637	AA296666	Sequence 688	D78013
Sequence 638	AA471119	Sequence 689	X82321
Sequence 639	AA333307	Sequence 690	AF031385
Sequence 640	W51898	Sequence 691	X62744
Sequence 641	AA631211	Sequence 692	X03363
Sequence 642	W39064	Sequence 693	AF148457
Sequence 643	AA419274	Sequence 694	X87212
Sequence 644	AA346470	Sequence 695	AJ012463
Sequence 645	AA773324	Sequence 696	AF070561
Sequence 646	AI267454	Sequence 697	AF008443
Sequence 647	AA137197	Sequence 698	AB023182
Sequence 648	AA158657	Sequence 699	X15187
Sequence 649	AA863284	Sequence 700	M14083
Sequence 650	AA703949	Sequence 701	AF070648
Sequence 651	AA663341	Sequence 702	U42404
Sequence 652	AA789332	Sequence 703	AJ223812
Sequence 653	AI924524	Sequence 704	AF124440
Sequence 654	R20888	Sequence 705	M64110
Sequence 655	AA551065	Sequence 706	E02164
Sequence 656	C03546	Sequence 707	M16342
Sequence 657	AA098824	Sequence 708	U30897
Sequence 658	AI084804	Sequence 709	AB002323
Sequence 659	AA484021	Sequence 710	D00015
Sequence 660	N72936	Sequence 711	U67093
Sequence 661	AA010309	Sequence 712	L22569

Table 9

Sequence 713	E07218	Sequence 759	M69066
Sequence 714	AF127918	Sequence 760	AF006085
Sequence 715	AF038187	Sequence 761	M34539
Sequence 716	AF026030	Sequence 762	Y09188
Sequence 717	AF035191	Sequence 763	U14750
Sequence 718	U42592	Sequence 764	X15880
Sequence 719	L19182	Sequence 765	D86958
Sequence 720	M20372	Sequence 766	AF113925
Sequence 721	X56134	Sequence 767	AF132965
Sequence 722	J03202	Sequence 768	L29050
Sequence 723	AB032951	Sequence 769	AF013759
Sequence 724	AF003594	Sequence 770	X84194
Sequence 725	AF151822	Sequence 771	AF147331
Sequence 726	Y00755	Sequence 772	K01144
Sequence 727	U72761	Sequence 773	AB023216
Sequence 728	U42457	Sequence 774	U89942
Sequence 729	Y00711	Sequence 775	X07979
Sequence 730	U80747	Sequence 776	X57351
Sequence 731	AF009615	Sequence 777	M63180
Sequence 732	AF069307	Sequence 778	AF109196
Sequence 733	D14665	Sequence 779	E01979
Sequence 734	M25246	Sequence 780	E03157
Sequence 735	L16510	Sequence 781	U04815
Sequence 736	AL080223	Sequence 782	X84694
Sequence 737	U90426	Sequence 783	AF067853
Sequence 738	M11867	Sequence 784	L03426
Sequence 739	AF039656	Sequence 785	AF034607
Sequence 740	AL049367	Sequence 786	X55525
Sequence 741	M26039	Sequence 787	S75725
Sequence 742	AF025684	Sequence 788	X07884
Sequence 743	M94556	Sequence 789	AF050641
Sequence 744	X15480	Sequence 790	AB018010
Sequence 745	Z26248	Sequence 791	AB029000
Sequence 746	L21934	Sequence 792	X16707
Sequence 747	U86602	Sequence 793	X52022
Sequence 748	AC005969	Sequence 794	X12451
	47992-48285	Sequence 795	AF006087
	9559-9649	Sequence 796	X63432
	55275-55348	Sequence 797	S79639
	55335-55424	Sequence 798	X93499
	55362-55439	Sequence 799	M14503
Sequence 749	AF034803	Sequence 800	AF040990
Sequence 750	Z18951	Sequence 801	X05231
Sequence 751	U19769	Sequence 802	D13666
Sequence 752	S82496	Sequence 803	U42594
Sequence 753	J05016	Sequence 804	J04173
Sequence 754	AF182294	Sequence 805	M31606
Sequence 755	AF031647	Sequence 806	AL109729
Sequence 756	AF083190	Sequence 807	AB030656
Sequence 757	J03209	Sequence 808	M29065
Sequence 758	M10119	Sequence 809	M25631

Table 9

Sequence 810	M16765	Sequence 861	M55618
Sequence 811	AF006751	Sequence 862	M24630
Sequence 812	U42456	Sequence 863	AB006780
Sequence 813	U65011	Sequence 864	X64229
Sequence 814	X05908	Sequence 865	U53204
Sequence 815	AB018288	Sequence 866	AF039291
Sequence 816	J00196	Sequence 867	AF077030
Sequence 817	J03464	Sequence 868	X14787
Sequence 818	D89937	Sequence 869	D31887
Sequence 819	D32076	Sequence 870	D13292
Sequence 820	D26120	Sequence 871	U33818
Sequence 821	AF127563	Sequence 872	L49345
Sequence 822	X00497	Sequence 873	AF015040
Sequence 823	M62424	Sequence 874	U83583
Sequence 824	M83653	Sequence 875	AB018271
Sequence 825	AF047185	Sequence 876	X64875
Sequence 826	J03015	Sequence 877	AB007915
Sequence 827	U10339	Sequence 878	X04828
Sequence 828	M24194	Sequence 879	U42593
Sequence 829	E01816	Sequence 880	X58141
Sequence 830	L20941	Sequence 881	AF047433
Sequence 831	M13899	Sequence 882	M88108
Sequence 832	AF063002	Sequence 883	X04665
Sequence 833	AF106966	Sequence 884	AB002533
Sequence 834	J03223	Sequence 885	U77456
Sequence 835	J02959	Sequence 886	X17206
Sequence 836	U77085	Sequence 887	D87666
Sequence 837	D45917	Sequence 888	U24169
Sequence 838	D38073	Sequence 889	M93425
Sequence 839	U29538	Sequence 890	X06547
Sequence 840	AB002310	Sequence 891	M10905
Sequence 841	AJ004832	Sequence 892	Z36852
Sequence 842	M13918	Sequence 893	AF017441
Sequence 843	U21858	Sequence 894	U79278
Sequence 844	X87342	Sequence 895	U43077
Sequence 845	U40282	Sequence 896	AF006082
Sequence 846	AF077042	Sequence 897	U46571
Sequence 847	M24486	Sequence 898	AF151872
Sequence 848	U09813	Sequence 899	M16827
Sequence 849	AL050396	Sequence 900	AF030555
Sequence 850	AL080119	Sequence 901	D43682
Sequence 851	X82456	Sequence 902	M69043
Sequence 852	L42531	Sequence 903	K03515
Sequence 853	AF026291	Sequence 904	M11887
Sequence 854	X02308	Sequence 905	AF006083
Sequence 855	M11147	Sequence 906	AJ001381
Sequence 856	J00194	Sequence 907	AL050071
Sequence 857	U41850	Sequence 908	AF071593
Sequence 858	U41806	Sequence 909	D49489
Sequence 859	J03040	Sequence 910	A06800
Sequence 860	Y00345	Sequence 911	X13709

Table 9

Sequence 912	J03210	Sequence 963	U47025
Sequence 913	M11718	Sequence 964	M14328
Sequence 914	AF082858	Sequence 965	AB010427
Sequence 915	M27110	Sequence 966	AF070548
Sequence 916	AL035081	Sequence 967	AB002359
Sequence 917	AF022229	Sequence 968	M32790
Sequence 918	X51945	Sequence 969	D17409
Sequence 919	AF002715	Sequence 970	J03041
Sequence 920	AF086249	Sequence 971	L54057
Sequence 921	D01038	Sequence 972	AF000982
Sequence 922	AB024703	Sequence 973	AF042166
Sequence 923	AB011004	Sequence 974	M94345
Sequence 924	AF091076	Sequence 975	AB033025
Sequence 925	AF037448	Sequence 976	AL080061
Sequence 926	L07393	Sequence 977	U42458
Sequence 927	D30648	Sequence 978	U67963
Sequence 928	J02642	Sequence 979	Z19554
Sequence 929	AB033075	Sequence 980	M31211
Sequence 930	E07219	Sequence 981	U42455
Sequence 931	M28992	Sequence 982	X52947
Sequence 932	AF017790	Sequence 983	D50372
Sequence 933	U41724	Sequence 984	E00882
Sequence 934	AB011542	Sequence 985	M13955
Sequence 935	M31159	Sequence 986	AB004047
Sequence 936	AL049356	Sequence 987	D50914
Sequence 937	D31764	Sequence 988	S75895
Sequence 938	U12535	Sequence 989	D43950
Sequence 939	D38251	Sequence 990	M17382
Sequence 940	M95627	Sequence 991	D17126
Sequence 941	AF081484	Sequence 992	AL080092
Sequence 942	AF061326	Sequence 993	M26252
Sequence 943	Z74615	Sequence 994	AF127761
Sequence 944	X02761	Sequence 995	M17783
Sequence 945	X82207	Sequence 996	AF061938
Sequence 946	D90452	Sequence 997	D83174
Sequence 947	X13839	Sequence 998	L40586
Sequence 948	AF026939	Sequence 999	M36693
Sequence 949	AF077367	Sequence 1000	D26351
Sequence 950	X76105	Sequence 1001	M58510
Sequence 951	U30521	Sequence 1002	AF077200
Sequence 952	Y08890	Sequence 1003	V34172
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Sequence 954	U72511	Sequence 1005	N81104
Sequence 955	AL050228	Sequence 1006	Q04549
Sequence 956	AF064084	Sequence 1007	Q65676
Sequence 957	D13665	Sequence 1008	Q48043
Sequence 958	J04795	Sequence 1009	Q62357
Sequence 959	AF156965	Sequence 1010	Q72480
Sequence 960	A03911	Sequence 1011	V90259
Sequence 961	U37230	Sequence 1012	V22716
Sequence 962	L28809	Sequence 1013	Q90112

Table 9

Sequence 1014 N81281

Sequence 1015 found in patent publication WO98/39446
GGGCGAATTGGAGNTCCCCGCGGTGGCGGCCNGAGGTANAAGNTTTATTTTTTTTTTTTT
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Sequence 1016 found in patent publication WO99/47683
CTCCTATAGGGCGAATTGGAGCTCCCCGCGGTGGCGGCCGAAGGNCCNCANGTCAGTCCA
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CACCAATATAATTATTAACCACTGTCGGAAAAACACACATAAATTCAGGTAAGACTAAAA
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TAGGCTGGTCTCTGTGGTGGTGGGGGCAGTCTTTTGAAGCTTTAAGTATCTGGTGGT
ACCTGCCCC

Sequence 1017 found in patent publication WO99/57132
AGGTACTACGTGCCCCAAGGAGAGTGCTGCCCCAGTGTGTGAAGATCCAGTGTATCCTTTT
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Sequence 1018 found in patent publication WO99/54448
GCCGAGGTACCGGATTCTTTTTTAACCTCCCTTCGNTTTCCCCCAATNTTTAAAAAC
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ACACATTGCAGCTTCAACTTTTCTCTTATGNTCTGGTTNGAACTAATACTTACCGAG
TCAAGACTTTGGGNTCATTTCAATTCAAGGGTCTTGGCTGCCTGNGGGGCTTCCCAAGG
NGGCCCTGGANGGGGGCCAAANGGGAAGTAACAGACACACCCATGTTGTCAAAGGATGG
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Sequence 1019 found in patent publication WO99/64576
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Table 9

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Sequence 1023	AI215522	Sequence 1071	AA037261
Sequence 1024	AA044629	Sequence 1072	AA209531
Sequence 1025	AA039635	Sequence 1073	T10966
Sequence 1026	AA295936	Sequence 1074	AA314355
Sequence 1027	AA355003	Sequence 1075	AA506766
Sequence 1028	AI750883	Sequence 1076	AA180768
Sequence 1029	R75982	Sequence 1077	W03032
Sequence 1030	AA479505	Sequence 1078	AA633534
Sequence 1031	AA829547	Sequence 1079	AI750399
Sequence 1032	AA191476	Sequence 1080	W02950
Sequence 1033	AA173807	Sequence 1081	AA808803
Sequence 1034	AA150369	Sequence 1082	W27056
Sequence 1035	AA313699	Sequence 1083	AA470026
Sequence 1036	AA357314	Sequence 1084	AA126391
Sequence 1037	AA046424	Sequence 1085	AA037382
Sequence 1038	AA083739	Sequence 1086	AA506767
Sequence 1039	AA374455	Sequence 1087	AA293537
Sequence 1040	AA838395	Sequence 1088	AW189039
Sequence 1041	AI540877	Sequence 1089	AA304760
Sequence 1042	AI207618	Sequence 1090	W24250
Sequence 1043	AW044405	Sequence 1091	AI745625
Sequence 1044	AW057905	Sequence 1092	AA354928
Sequence 1045	AA729011	Sequence 1093	AA121923
Sequence 1046	AI744245	Sequence 1094	AW178642
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Sequence 1050	AA056177	Sequence 1098	AA927532
Sequence 1051	AA043050	Sequence 1099	AA985311
Sequence 1052	AA486521	Sequence 1100	AI160630
Sequence 1053	AA557778	Sequence 1101	AA838133
Sequence 1054	AA134180	Sequence 1102	AA090669
Sequence 1055	AI916675	Sequence 1103	AA179487
Sequence 1056	AA573479	Sequence 1104	AA074930
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Sequence 1062	AA332040	Sequence 1110	AA314146
Sequence 1063	AA323949	Sequence 1111	H59915
Sequence 1064	AI879839	Sequence 1112	AA469151
Sequence 1065	AA526812	Sequence 1113	AA985545
Sequence 1066	AA088914	Sequence 1114	AA856537
Sequence 1067	AA252696	Sequence 1115	AA989451
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Table 9

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Sequence 1119	AI307407	Sequence 1170	AA133849
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Sequence 1121	AA229564	Sequence 1172	AL042356
Sequence 1122	AA171454	Sequence 1173	AA022980
Sequence 1123	H30857	Sequence 1174	AA488579
Sequence 1124	AI972286	Sequence 1175	AI270393
Sequence 1125	T32135	Sequence 1176	AA099698
Sequence 1126	AA633075	Sequence 1177	AA151148
Sequence 1127	AA032059	Sequence 1178	AA186825
Sequence 1128	AA033520	Sequence 1179	AA039807
Sequence 1129	AA309058	Sequence 1180	AA306715
Sequence 1130	AA449054	Sequence 1181	AA115684
Sequence 1131	F13272	Sequence 1182	AA306847
Sequence 1132	AA745592	Sequence 1183	AW118495
Sequence 1133	AA099123	Sequence 1184	AA658159
Sequence 1134	AA877477	Sequence 1185	AA307209
Sequence 1135	AA361689	Sequence 1186	AW160317
Sequence 1136	AA317551	Sequence 1187	AI460220
Sequence 1137	AA826000	Sequence 1188	AI190303
Sequence 1138	AA311981	Sequence 1189	R34916
Sequence 1139	AA316579	Sequence 1190	AA205295
Sequence 1140	AA148014	Sequence 1191	W26185
Sequence 1141	AA844517	Sequence 1192	AI963434
Sequence 1142	AA507851	Sequence 1193	AA805563
Sequence 1143	AA337947	Sequence 1194	AA411564
Sequence 1144	AA745332	Sequence 1195	N42086
Sequence 1145	AI879268	Sequence 1196	AA468429
Sequence 1146	AA608702	Sequence 1197	AA316000
Sequence 1147	AA131793	Sequence 1198	AI220531
Sequence 1148	C05733	Sequence 1199	AA301629
Sequence 1149	AA337280	Sequence 1200	AA640687
Sequence 1150	AA025287	Sequence 1201	AA338674
Sequence 1151	AA452312	Sequence 1202	AI253379
Sequence 1152	AI937296	Sequence 1203	AL046669
Sequence 1153	AI912021	Sequence 1204	AI751076
Sequence 1154	AA393148	Sequence 1205	C14920
Sequence 1155	AA315984	Sequence 1206	AA770326
Sequence 1156	AA533369	Sequence 1207	AW020379
Sequence 1157	AI285143	Sequence 1208	W21558
Sequence 1158	AA577585	Sequence 1209	AA683546
Sequence 1159	AA431004	Sequence 1210	AA134196
Sequence 1160	AI697056	Sequence 1211	AA032281
Sequence 1161	AA311081	Sequence 1212	H44201
Sequence 1162	AA484407	Sequence 1213	AI925654
Sequence 1163	AA608564	Sequence 1214	AA094477
Sequence 1164	AA468774	Sequence 1215	AA182547
Sequence 1165	AA307949	Sequence 1216	AA053587
Sequence 1166	AA228021	Sequence 1217	AI300582
Sequence 1167	D54010	Sequence 1218	AA442114
Sequence 1168	AA224968	Sequence 1219	AA367066

Table 9

Sequence 1220	AA308400	Sequence 1271	AA236296
Sequence 1221	AI367372	Sequence 1272	AA872647
Sequence 1222	AA026444	Sequence 1273	AA130549
Sequence 1223	AA293385	Sequence 1274	AA225819
Sequence 1224	AA573742	Sequence 1275	AA011011
Sequence 1225	D52382	Sequence 1276	AA996199
Sequence 1226	AA316462	Sequence 1277	AA316893
Sequence 1227	AA804661	Sequence 1278	D60300
Sequence 1228	AA480385	Sequence 1279	D60285
Sequence 1229	AI806153	Sequence 1280	AI499331
Sequence 1230	AI080485	Sequence 1281	AA115006
Sequence 1231	AA180137	Sequence 1282	AA305736
Sequence 1232	AA305866	Sequence 1283	AI027887
Sequence 1233	AA258087	Sequence 1284	AA564296
Sequence 1234	AA086189	Sequence 1285	AA587236
Sequence 1235	AA099093	Sequence 1286	AA045659
Sequence 1236	AA307576	Sequence 1287	AA351480
Sequence 1237	N77808	Sequence 1288	R63282
Sequence 1238	AA310273	Sequence 1289	AA528155
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Sequence 1240	AA837334	Sequence 1291	AA075474
Sequence 1241	AA844484	Sequence 1292	AA522530
Sequence 1242	AI564487	Sequence 1293	AA112311
Sequence 1243	AA723130	Sequence 1294	AA507595
Sequence 1244	AL042316	Sequence 1295	AA236043
Sequence 1245	AL042270	Sequence 1296	AA748181
Sequence 1246	AA214035	Sequence 1297	AA341818
Sequence 1247	AA604283	Sequence 1298	AA244238
Sequence 1248	N26315	Sequence 1299	T29757
Sequence 1249	AA165634	Sequence 1300	AA515132
Sequence 1250	AA093276	Sequence 1301	AA310898
Sequence 1251	AA284355	Sequence 1302	AA159170
Sequence 1252	AA160505	Sequence 1303	AA310298
Sequence 1253	AA464250	Sequence 1304	AA311555
Sequence 1254	AA307066	Sequence 1305	AA243995
Sequence 1255	AA470936	Sequence 1306	U72943
Sequence 1256	N73165	Sequence 1307	AA180513
Sequence 1257	AA526497	Sequence 1308	AA664622
Sequence 1258	AA171834	Sequence 1309	AA507997
Sequence 1259	AA164709	Sequence 1310	AA069860
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Sequence 1261	AA355809	Sequence 1312	AA250805
Sequence 1262	AA278470	Sequence 1313	AA247691
Sequence 1263	AA307697	Sequence 1314	AA152000
Sequence 1264	AA927313	Sequence 1315	AA595626
Sequence 1265	AA422057	Sequence 1316	AI499067
Sequence 1266	AA367451	Sequence 1317	AA182948
Sequence 1267	AI690596	Sequence 1318	AA099516
Sequence 1268	AA313850	Sequence 1319	AA112734
Sequence 1269	AA214231	Sequence 1320	AA486488
Sequence 1270	AW161503	Sequence 1321	AA126932

Table 9

Sequence 1322	AA587859	Sequence 1373	AL119362
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Sequence 1324	W65292	Sequence 1375	W80587
Sequence 1325	AA244217	Sequence 1376	N42608
Sequence 1326	AA229029	Sequence 1377	AA173250
Sequence 1327	AA216117	Sequence 1378	F07281
Sequence 1328	AA196003	Sequence 1379	AI090786
Sequence 1329	AA120986	Sequence 1380	AA128300
Sequence 1330	AA888609	Sequence 1381	R85754
Sequence 1331	AA307728	Sequence 1382	AI131470
Sequence 1332	AA315928	Sequence 1383	AI301163
Sequence 1333	AI751215	Sequence 1384	AA076618
Sequence 1334	R17092	Sequence 1385	AI890549
Sequence 1335	AI432306	Sequence 1386	AA296285
Sequence 1336	AA449517	Sequence 1387	AA648634
Sequence 1337	H58018	Sequence 1388	N44682
Sequence 1338	AI963471	Sequence 1389	AI608873
Sequence 1339	AI494555	Sequence 1390	AA316391
Sequence 1340	AA343951	Sequence 1391	AA329116
Sequence 1341	AA130428	Sequence 1392	R80333
Sequence 1342	AI207650	Sequence 1393	AA020915
Sequence 1343	AA307371	Sequence 1394	AA401528
Sequence 1344	AA421213	Sequence 1395	AA953232
Sequence 1345	R73432	Sequence 1396	AA195617
Sequence 1346	AA150267	Sequence 1397	W60583
Sequence 1347	AA282996	Sequence 1398	AA296277
Sequence 1348	W19427	Sequence 1399	AA393178
Sequence 1349	AA552967	Sequence 1400	AI765620
Sequence 1350	AA021403	Sequence 1401	AA160618
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Sequence 1353	AA808675	Sequence 1404	AI829966
Sequence 1354	AA578609	Sequence 1405	AA373756
Sequence 1355	AI207731	Sequence 1406	AA179187
Sequence 1356	AA776291	Sequence 1407	AA331257
Sequence 1357	D60027	Sequence 1408	M85462
Sequence 1358	AA226721	Sequence 1409	AA305257
Sequence 1359	AA236418	Sequence 1410	AL121175
Sequence 1360	W39240	Sequence 1411	AA502836
Sequence 1361	AL043251	Sequence 1412	AA295991
Sequence 1362	AA662180	Sequence 1413	H79674
Sequence 1363	T29960	Sequence 1414	AA420581
Sequence 1364	AI766178	Sequence 1415	AI123763
Sequence 1365	AA635411	Sequence 1416	AW176262
Sequence 1366	AA315384	Sequence 1417	AI889552
Sequence 1367	AL038924	Sequence 1418	AA190350
Sequence 1368	AA557369	Sequence 1419	AA236767
Sequence 1369	AA325046	Sequence 1420	AA284955
Sequence 1370	AA780152	Sequence 1421	AA218806
Sequence 1371	AA293654	Sequence 1422	AA593718
Sequence 1372	AA313235	Sequence 1423	AI131240

Table 9

Sequence 1424	AA159657	Sequence 1475	AI133511
Sequence 1425	AW175609	Sequence 1476	AF005037
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Sequence 1427	AA083535	Sequence 1478	AF151810
Sequence 1428	AA582006	Sequence 1479	X74801
Sequence 1429	AA496091	Sequence 1480	AB002342
Sequence 1430	AA211798	Sequence 1481	X52104
Sequence 1431	AA394165	Sequence 1482	D87127
Sequence 1432	AA469324	Sequence 1483	AF036241
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Sequence 1434	AA860340	Sequence 1485	X51466
Sequence 1435	AA626503	Sequence 1486	M58028
Sequence 1436	AA457194	Sequence 1487	U62583
Sequence 1437	AA195824	Sequence 1488	AL133078
Sequence 1438	R71118	Sequence 1489	L41498
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Sequence 1440	AA502897	Sequence 1491	X71490
Sequence 1441	AW070462	Sequence 1492	AF052179
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Sequence 1447	AA005407	Sequence 1498	M88279
Sequence 1448	W04314	Sequence 1499	M23613
Sequence 1449	AA226217	Sequence 1500	L18964
Sequence 1450	AA349978	Sequence 1501	J03799
Sequence 1451	AA449908	Sequence 1502	L38961
Sequence 1452	AI146884	Sequence 1503	M73547
Sequence 1453	AA244162	Sequence 1504	U54562
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Sequence 1459	AI816006	Sequence 1510	X64330
Sequence 1460	AA307247	Sequence 1511	Y14946
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Sequence 1462	AI473927	Sequence 1513	D85758
Sequence 1463	AL046375	Sequence 1514	M95767
Sequence 1464	AA078973	Sequence 1515	Y00503
Sequence 1465	AA160111	Sequence 1516	M14631
Sequence 1466	AA315718	Sequence 1517	AF077036
Sequence 1467	AA029090	Sequence 1518	U24105
Sequence 1468	AA297740	Sequence 1519	AL050159
Sequence 1469	AI336195	Sequence 1520	AF103803
Sequence 1470	AA558345	Sequence 1521	E03953
Sequence 1471	AA814140	Sequence 1522	X70940
Sequence 1472	AA429258	Sequence 1523	X12876
Sequence 1473	AA065281	Sequence 1524	AF098865
Sequence 1474	AA057428	Sequence 1525	AL049929

Table 9

Sequence 1526	U18062	Sequence 1577	D90373
Sequence 1527	AF132944	Sequence 1578	AF151835
Sequence 1528	D45198	Sequence 1579	X80909
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Sequence 1530	U49240	Sequence 1581	X80692
Sequence 1531	X73066	Sequence 1582	AF101051
Sequence 1532	AF006043	Sequence 1583	L25610
Sequence 1533	L22009	Sequence 1584	AF062536
Sequence 1534	AB007962	Sequence 1585	E02904
Sequence 1535	X03559	Sequence 1586	AB020703
Sequence 1536	U14970	Sequence 1587	AJ005579
Sequence 1537	M26325	Sequence 1588	D83735
Sequence 1538	E08542	Sequence 1589	D31767
Sequence 1539	J03503	Sequence 1590	U12979
Sequence 1540	D28473	Sequence 1591	L28010
Sequence 1541	D13641	Sequence 1592	AF020797
Sequence 1542	AF047473	Sequence 1593	Z13009
Sequence 1543	Z48042	Sequence 1594	X71428
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Sequence 1546	AF038962	Sequence 1597	D44466
Sequence 1547	X61156	Sequence 1598	AF144713
Sequence 1548	M26880	Sequence 1599	Y13647
Sequence 1549	AB001636	Sequence 1600	M74090
Sequence 1550	AF054990	Sequence 1601	X13482
Sequence 1551	AL117395	Sequence 1602	AF092565
Sequence 1552	M26512	Sequence 1603	AF151846
Sequence 1553	AF118886	Sequence 1604	D13388
Sequence 1554	AJ011001	Sequence 1605	AF038451
Sequence 1555	U07151	Sequence 1606	AB018331
Sequence 1556	L33930	Sequence 1607	X15183
Sequence 1557	D38305	Sequence 1608	U76111
Sequence 1558	AF010309	Sequence 1609	AF100755
Sequence 1559	D43948	Sequence 1610	AB023205
Sequence 1560	J02683	Sequence 1611	AF007791
Sequence 1561	L08599	Sequence 1612	J04208
Sequence 1562	AB020705	Sequence 1613	AF132941
Sequence 1563	D26485	Sequence 1614	D50310
Sequence 1564	U05040	Sequence 1615	AF086172
Sequence 1565	D55716	Sequence 1616	AL050101
Sequence 1566	AF052578	Sequence 1617	D50525
Sequence 1567	U41060	Sequence 1618	AB033073
Sequence 1568	D78275	Sequence 1619	M17851
Sequence 1569	X61970	Sequence 1620	U14966
Sequence 1570	D14710	Sequence 1621	U75283
Sequence 1571	AJ009985	Sequence 1622	X17620
Sequence 1572	D86981	Sequence 1623	AB019563
Sequence 1573	D88357	Sequence 1624	M55409
Sequence 1574	AF086336	Sequence 1625	AF151878
Sequence 1575	S73591	Sequence 1626	S48196
Sequence 1576	M11948	Sequence 1627	D43947

Table 9

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Sequence 1629	X04106	Sequence 1680	D21260
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Sequence 1634	M31627	Sequence 1685	D31885
Sequence 1635	Z48501	Sequence 1686	Z22548
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Sequence 1637	AL117557	Sequence 1688	AB020636
Sequence 1638	AJ223352	Sequence 1689	AL031680
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Sequence 1640	D28589		82595-82704
Sequence 1641	X52882	Sequence 1690	M60257
Sequence 1642	X04236	Sequence 1691	X15822
Sequence 1643	AJ224442	Sequence 1692	AF070626
Sequence 1644	AF152463	Sequence 1693	U75330
Sequence 1645	M64241	Sequence 1694	M30627
Sequence 1646	X94754	Sequence 1695	AF052087
Sequence 1647	J02943	Sequence 1696	X07466
Sequence 1648	X59618	Sequence 1697	M86752
Sequence 1649	AF141347	Sequence 1698	X13293
Sequence 1650	AF035309	Sequence 1699	M62896
Sequence 1651	AL080118	Sequence 1700	M34175
Sequence 1652	U49278	Sequence 1701	AF084457
Sequence 1653	M81757	Sequence 1702	L09235
Sequence 1654	M37583	Sequence 1703	AF085361
Sequence 1655	Y13736	Sequence 1704	D63876
Sequence 1656	AF035555	Sequence 1705	AF070649
Sequence 1657	L13977	Sequence 1706	J05243
Sequence 1658	U96628	Sequence 1707	M15533
Sequence 1659	D14530	Sequence 1708	X74262
Sequence 1660	X81713	Sequence 1709	D78130
Sequence 1661	J05459	Sequence 1710	AF097514
Sequence 1662	D14878	Sequence 1711	U44772
Sequence 1663	U89505	Sequence 1712	M62898
Sequence 1664	AL049932	Sequence 1713	AF041483
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Sequence 1666	X86809	Sequence 1715	A32135
Sequence 1667	AF047184	Sequence 1716	AF035158
Sequence 1668	L38951	Sequence 1717	AF147322
Sequence 1669	L19597	Sequence 1718	AF086136
Sequence 1670	AB018290	Sequence 1719	AL117514
Sequence 1671	J02621	Sequence 1720	M87338
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Sequence 1673	AF054187	Sequence 1722	D87969
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Table 9

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Sequence 1732	AB015907	Sequence 1780	AF132940
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Sequence 1743	L09159	Sequence 1791	D16849
Sequence 1744	AL110271	Sequence 1792	D87735
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Sequence 1835 found in patent publication WO99/57144
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Table 9

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Sequence 2101	AA318625	Sequence 2152	AA033869
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Sequence 2118	AI932293	Sequence 2169	C18054
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Sequence 2120	AI057429	Sequence 2171	AA557979
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Sequence 2135	AA879191	Sequence 2186	AI199481
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Sequence 2139	AI686325	Sequence 2190	AI110706
Sequence 2140	AI394259	Sequence 2191	N31818
Sequence 2141	AA588034	Sequence 2192	AA304819
Sequence 2142	H73183	Sequence 2193	AI093004
Sequence 2143	AA492522	Sequence 2194	AA334592
Sequence 2144	AI648676	Sequence 2195	AI092971

Table 9

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Sequence 2216	AA297432	Sequence 2267	AA827553
Sequence 2217	AI818395	Sequence 2268	AA493565
Sequence 2218	AA295062	Sequence 2269	AI701132
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Sequence 2220	AA258003	Sequence 2271	AA707750
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Sequence 2313	W92006	Sequence 2364	AI034414
Sequence 2314	AA845426	Sequence 2365	AI127836
Sequence 2315	AA883502	Sequence 2366	AI139120
Sequence 2316	AI133589	Sequence 2367	H73197
Sequence 2317	AI142227	Sequence 2368	AA618277
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Table 9

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Sequence 2444	AA315134	Sequence 2495	AI433313
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Sequence 2567 X55675
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Sequence 2569 Z13009
Sequence 2570 D63480
Sequence 2571 X16940
Sequence 2572 M16827
Sequence 2573 U72514
Sequence 2574 X06547
Sequence 2575 D87735
Sequence 2576 X03635
Sequence 2577 M37190
Sequence 2578 X63657
Sequence 2579 E00195
Sequence 2580 X57819
Sequence 2581 AF072930
Sequence 2582 AF072810
Sequence 2583 X54937
Sequence 2584 AB016789
Sequence 2585 AF107406
Sequence 2586 AL050142
Sequence 2587 AF115384
Sequence 2588 L38995
Sequence 2589 M18533
Sequence 2590 L13977
Sequence 2591 M94046
Sequence 2592 M55409
Sequence 2593 M35198
Sequence 2594 D50923
Sequence 2595 L19067
Sequence 2596 U25997
Sequence 2597 AF113251
Sequence 2598 AF008551
Sequence 2599 AF109681
Sequence 2600 M33519
Sequence 2601 U70668
Sequence 2602 AL050290
Sequence 2603 AB011792

Table 9

Sequence 2604	AF078859	Sequence 2655	X86691
Sequence 2605	AF032119	Sequence 2656	AB024301
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Sequence 2607	M24847	Sequence 2658	U07643
Sequence 2608	AL050225	Sequence 2659	AF047033
Sequence 2609	M90360	Sequence 2660	D14710
Sequence 2610	AL050202	Sequence 2661	X96698
Sequence 2611	AF035311	Sequence 2662	AB033098
Sequence 2612	K01396	Sequence 2663	AJ132583
Sequence 2613	X95190	Sequence 2664	AF078861
Sequence 2614	AJ006470	Sequence 2665	U30246
Sequence 2615	X51473	Sequence 2666	AB019494
Sequence 2616	AF067656	Sequence 2667	AF043644
Sequence 2617	AF072371	Sequence 2668	X58082
Sequence 2618	AB007892	Sequence 2669	M37716
Sequence 2619	L34101	Sequence 2670	AL080192
Sequence 2620	M64082	Sequence 2671	AF077048
Sequence 2621	X16396	Sequence 2672	AB001928
Sequence 2622	U22897	Sequence 2673	U76549
Sequence 2623	U90549	Sequence 2674	U18297
Sequence 2624	U35464	Sequence 2675	AB000095
Sequence 2625	D13287	Sequence 2676	Y14736
Sequence 2626	U03688	Sequence 2677	L76159
Sequence 2627	M74509	Sequence 2678	L38486
Sequence 2628	AF063613	Sequence 2679	X01742
Sequence 2629	AF151884	Sequence 2680	AB007899
Sequence 2630	M87790	Sequence 2681	E02628
Sequence 2631	AB011173	Sequence 2682	AF103804
Sequence 2632	AF200348	Sequence 2683	U26174
Sequence 2633	M81844	Sequence 2684	M19961
Sequence 2634	U18121	Sequence 2685	U90919
Sequence 2635	M88461	Sequence 2686	Y17171
Sequence 2636	L15078	Sequence 2687	U96628
Sequence 2637	J00194	Sequence 2688	AB007921
Sequence 2638	E08293	Sequence 2689	AF035032
Sequence 2639	J02876	Sequence 2690	AF035121
Sequence 2640	AF145385	Sequence 2691	D89289
Sequence 2641	M60854	Sequence 2692	X87241
Sequence 2642	Y18314	Sequence 2693	U34252
Sequence 2643	J00200	Sequence 2694	U88666
Sequence 2644	AB023232	Sequence 2695	J00129
Sequence 2645	AF013160	Sequence 2696	M16660
Sequence 2646	AF042166	Sequence 2697	Z82022
Sequence 2647	AF100756	Sequence 2698	M55654
Sequence 2648	AF141347	Sequence 2699	L03162
Sequence 2649	AF126181	Sequence 2700	U32989
Sequence 2650	AB011169	Sequence 2701	Y09703
Sequence 2651	M34455	Sequence 2702	AF028832
Sequence 2652	AF013759	Sequence 2703	AF012072
Sequence 2653	AF002715	Sequence 2704	U66615
Sequence 2654	AF132945	Sequence 2705	M33600

Table 9

Sequence 2706	M12525	Sequence 2757	L19185
Sequence 2707	M12937	Sequence 2758	AF074264
Sequence 2708	AB023221	Sequence 2759	AF097514
Sequence 2709	J03241	Sequence 2760	L03156
Sequence 2710	AF038421	Sequence 2761	U68140
Sequence 2711	U51134	Sequence 2762	D85390
Sequence 2712	J02814	Sequence 2763	M14661
Sequence 2713	X02422	Sequence 2764	M33689
Sequence 2714	AF178946	Sequence 2765	U16798
Sequence 2715	M30817	Sequence 2766	AB020633
Sequence 2716	AJ010442	Sequence 2767	AF044774
Sequence 2717	AF156965	Sequence 2768	U25182
Sequence 2718	X98259	Sequence 2769	AF099149
Sequence 2719	U29615	Sequence 2770	J02943
Sequence 2720	X03559	Sequence 2771	U89326
Sequence 2721	D90226	Sequence 2772	AF041449
Sequence 2722	E08663	Sequence 2773	L29158
Sequence 2723	U22233	Sequence 2774	U90942
Sequence 2724	AB014536	Sequence 2775	AF025684
Sequence 2725	M31165	Sequence 2776	D17554
Sequence 2726	D89053	Sequence 2777	AB032977
Sequence 2727	M31724	Sequence 2778	AB020637
Sequence 2728	M16086	Sequence 2779	M87771
Sequence 2729	AF151809	Sequence 2780	X04297
Sequence 2730	AJ243936	Sequence 2781	D21261
Sequence 2731	U02493	Sequence 2782	U08023
Sequence 2732	AB033042	Sequence 2783	AF024636
Sequence 2733	L13923	Sequence 2784	AJ251053
Sequence 2734	Y18007	Sequence 2785	L20814
Sequence 2735	AB006624	Sequence 2786	U47741
Sequence 2736	AB023193	Sequence 2787	M55580
Sequence 2737	AF027208	Sequence 2788	AJ010443
Sequence 2738	M24194	Sequence 2789	AL117237
Sequence 2739	L77213	Sequence 2790	M13231
Sequence 2740	M10906	Sequence 2791	AF086130
Sequence 2741	AF050639	Sequence 2792	D87969
Sequence 2742	Z36531	Sequence 2793	J04177
Sequence 2743	D29677	Sequence 2794	S79895
Sequence 2744	AB007933	Sequence 2795	AF035408
Sequence 2745	AF073887	Sequence 2796	M13194
Sequence 2746	AF100741	Sequence 2797	AB014610
Sequence 2747	M31212	Sequence 2798	X87176
Sequence 2748	X51420	Sequence 2799	AF070611
Sequence 2749	M34458	Sequence 2800	M98325
Sequence 2750	U90552	Sequence 2801	AF156098
Sequence 2751	AF070660	Sequence 2802	AF061738
Sequence 2752	D00422	Sequence 2803	J04162
Sequence 2753	M14354	Sequence 2804	L25081
Sequence 2754	L05425	Sequence 2805	X59841
Sequence 2755	E01500	Sequence 2806	M80359
Sequence 2756	AB005289	Sequence 2807	M23379

Table 9

Sequence 2808	D43950	Sequence 2859	AF170583
Sequence 2809	S77601	Sequence 2860	A32135
Sequence 2810	AF109126	Sequence 2861	AB002387
Sequence 2811	D89667	Sequence 2862	AF064092
Sequence 2812	X04098	Sequence 2863	M14483
Sequence 2813	U10117	Sequence 2864	AB032961
Sequence 2814	AF053233	Sequence 2865	D84105
Sequence 2815	Y00281	Sequence 2866	U87571
Sequence 2816	J03619	Sequence 2867	M99603
Sequence 2817	AB004304	Sequence 2868	AB014574
Sequence 2818	AF177775	Sequence 2869	AJ132694
Sequence 2819	AF075589	Sequence 2870	M90439
Sequence 2820	D63391	Sequence 2871	AB033094
Sequence 2821	D50525	Sequence 2872	AF117754
Sequence 2822	M69043	Sequence 2873	AF050171
Sequence 2823	AF111713	Sequence 2874	AF031141
Sequence 2824	U62583	Sequence 2875	M97168
Sequence 2825	M58485	Sequence 2876	U31906
Sequence 2826	AB020663	Sequence 2877	S81914
Sequence 2827	AF034802	Sequence 2878	D14696
Sequence 2828	AF047185	Sequence 2879	AF004562
Sequence 2829	L20941	Sequence 2880	J02908
Sequence 2830	AF144103	Sequence 2881	AL049985
Sequence 2831	X64810	Sequence 2882	X84373
Sequence 2832	J03015	Sequence 2883	E03413
Sequence 2833	S73591	Sequence 2884	M18728
Sequence 2834	U60259	Sequence 2885	D25542
Sequence 2835	M59906	Sequence 2886	AB014538
Sequence 2836	X57817	Sequence 2887	AL117526
Sequence 2837	D45248	Sequence 2888	AF131746
Sequence 2838	D37965	Sequence 2889	U82988
Sequence 2839	AB019002	Sequence 2890	AL050179
Sequence 2840	M62783	Sequence 2891	U76764
Sequence 2841	D83077	Sequence 2892	AB022653
Sequence 2842	AF056322	Sequence 2893	D50929
Sequence 2843	AB007934	Sequence 2894	U50078
Sequence 2844	D50926	Sequence 2895	D01059
Sequence 2845	M14189	Sequence 2896	M17323
Sequence 2846	U56255	Sequence 2897	U31520
Sequence 2847	AJ001443	Sequence 2898	U37283
Sequence 2848	AB003102	Sequence 2899	M18642
Sequence 2849	X00351	Sequence 2900	AF132048
Sequence 2850	AB007896	Sequence 2901	AB011108
Sequence 2851	D13286	Sequence 2902	M21008
Sequence 2852	AF077951	Sequence 2903	X72760
Sequence 2853	AB019563	Sequence 2904	Y17169
Sequence 2854	AF089750	Sequence 2905	D31764
Sequence 2855	AJ007798	Sequence 2906	Z70701
Sequence 2856	M21575	Sequence 2907	E01932
Sequence 2857	AF124438	Sequence 2908	AL117434
Sequence 2858	L22157	Sequence 2909	AL080097

Table 9

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Sequence 2911	AL049250	Sequence 2962	AB033082
Sequence 2912	M95787	Sequence 2963	AL050255
Sequence 2913	X74979	Sequence 2964	M55531
Sequence 2914	AB018346	Sequence 2965	S82240
Sequence 2915	AL080185	Sequence 2966	AB018330
Sequence 2916	L04284	Sequence 2967	Y00052
Sequence 2917	D42085	Sequence 2968	AF006085
Sequence 2918	M16941	Sequence 2969	X00474
Sequence 2919	M36647	Sequence 2970	AF049523
Sequence 2920	J05459	Sequence 2971	X95747
Sequence 2921	U61084	Sequence 2972	AB020692
Sequence 2922	AF044671	Sequence 2973	AF070646
Sequence 2923	AF027964	Sequence 2974	U41850
Sequence 2924	AF052123	Sequence 2975	AF004849
Sequence 2925	X15822	Sequence 2976	L03785
Sequence 2926	AF136380	Sequence 2977	D84488
Sequence 2927	U54559	Sequence 2978	X84987
Sequence 2928	AF077045	Sequence 2979	X97609
Sequence 2929	AB019691	Sequence 2980	Q11879
Sequence 2930	J02923	Sequence 2981	X39551
Sequence 2931	J00199	Sequence 2982	X14998
Sequence 2932	D80000	Sequence 2983	Z24879
Sequence 2933	L20773	Sequence 2984	X39695
Sequence 2934	M97924	Sequence 2985	X40006
Sequence 2935	AJ132637	Sequence 2986	X25445
Sequence 2936	X05044	Sequence 2987	V19980
Sequence 2937	M22414	Sequence 2988	X40191
Sequence 2938	X82456	Sequence 2989	Z24870
Sequence 2939	AB005038	Sequence 2990	X04343
Sequence 2940	M57399	Sequence 2991	T02792
Sequence 2941	AL110206	Sequence 2992	V89227
Sequence 2942	U07991	Sequence 2993	Q54117
Sequence 2943	K03515	Sequence 2994	X39539
Sequence 2944	U26032	Sequence 2995	X40654
Sequence 2945	X04408	Sequence 2996	V44294
Sequence 2946	E01971	Sequence 2997	Z14620
Sequence 2947	AF019562	Sequence 2998	V10352
Sequence 2948	E08542	Sequence 2999	Z33987
Sequence 2949	AF070626	Sequence 3000	X40706
Sequence 2950	L43575	Sequence 3001	X00706
Sequence 2951	AF061736	Sequence 3002	V89695
Sequence 2952	S77512	Sequence 3003	V68998
Sequence 2953	AJ010071	Sequence 3004	X60801
Sequence 2954	M17733	Sequence 3005	V73004
Sequence 2955	X93036	Sequence 3006	X84201
Sequence 2956	M12938	Sequence 3007	X25487
Sequence 2957	D86958	Sequence 3008	T30092
Sequence 2958	X54137	Sequence 3009	X97764
Sequence 2959	E08764	Sequence 3010	V59651
Sequence 2960	AB000114		

Table 9

Sequence 3011 found in patent publication WO99/53051
CACTACTTAGGGCAATTGGAGCTCACCGCGGTGGCGGCCCGCCGGGCAGGTACTGTCCCA
CACCTGACAGTAATAGTCGGCCTCATCCTCGGCTTCGACCCTACTGATGGTCAGGGTGGC
CGTGTTCACAGAGTTGGAGCCAGAGATTGCTCAGGGATCCCTGAGGGCCGGTCCGTGTC
ATCAAAGACGGCCAATGTAGGGACCTGGCCTGGCTTCGTGATACCAAGTGCACACTTT
TACTTTCAATATTGTCTCCCCACAGGAAATCCTGGCCCGTCTGTCTGGGGCCACTGAC
ACCGAGGGTGGCTGAGTCAGGACATAGGAGGTCACAGAGTCTGTGCAGTGAGAGAGGAGG
CCCGAGGAGGAGAACGGTCCAGGCCATGGCTGAGGCACCAACCAAGTGTGCTTTTCTTAGG
CCCAGACTCCCCCGTACCTC

Sequence 3012 found in patent publication WO99/54461
TCCTATAGGGGCGAATTGGAGCTCCCCGCGGTGGCGGCCCGCCGGGCAGGTACCTCTTCT
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GTCAGCATAGAAAAGGAAATGTTTTACCTTATCTCCTGTATGTATGATAGAACTTAAAA
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CATGCCATCCACAGTGTGTTAGTGTAGTCCACGGCTGACTTGCAGTGATAAGAAAAAGC
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CCTGGGGAAATTGATGGGTGTGGCAAGTGGACCCTGTGAAGAGGGAGAATCTAGCCTTCAG
CCTGGTCAGTGTAAACCACTAGAGAACTGAGCTTTATATCCTTTTTTAATGCCTGGTGA
ATTTTAACCTATTGGAAACATTAGAAGCAAAATTCCTCAGGGGATTTTTTCATTTAAACAT
TCCCTCAANATNATTTAAGCCTNTNTATCAATTAGNAAAGGGGAAGCCTNTTCATTTTT
ATT

Sequence 3013 found in patent publication WO99/54446
AGCTCCCCGCGGTGGCGGCCGAGGTACACTGACTTACGCCCTTCCACAGCTACAGATAA
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GCCTGTGTATCTGCTTGGAGGAGACGTTCCAATGTGCTGCCTTGTTCAGAGATGGTGTAG
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ACATAGCCTTTTATGACTGTGTATCTTTGCATCGCTTTGNTTTCTTTTATGTCTCTGA
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Sequence 3014 found in patent publication WO99/57132
AGGTACGCGGGTAAACACCGAGGAACATGTTTCAAGAACGTAAACAAGGCTGCACCTTGAA
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GCCCAAGAAGTGACAGCCATAATCTGTGACAAGTATTGTCCACTTGGATTGCTGAAGAA
TAAGCACGGCTGTGACATCTGTGCTTGTAAAGAAATGTCCAGAGCTCTCATGCAGTAAGA
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CCTCTGCTTCAGCTGGGCCACCCATCCTGTCCGGCACTTGTCTCACCGTGGAT

Sequence 3015 found in patent publication WO99/53051
GCGAATTGTTGCTCTNCGCGGCGGCGGCCGAGGACGCGGGGACCCAAAAACCACACCCC
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TTCTTGGTGGCAGCAGCAACAGGTGCCCACTCCAGGTTTCACTGGAGCAGTCTGGACCT
GAATTGAAGAACCCTGGGGCCTCAGTGAAGGTCTCCTGCAAGGCCTCTGGTTACAGCTTT
ATCAGCAATGGCATCACCTGGGTGCGACAGGCCCCCTGGACAAGGGCTTGAGTGGATGGGC
TGGATCAGCGCTAGCAACGGTAACACAACTACGCACAAGAAAGTTCCAGGGCAAGAGTCA
CCATGACCACAGNACACATCCACGGAGCACAACTTATATTTGGGAGCTTGAAGGGAGCCC
TTGGAGGATCT

Sequence 3016 found in patent publication WO99/54461
CCGGGCAGGTACAGGTGCCTGCAGAGATGCCCACTTTCAGCCAGAAATCTATGGTTTTGC
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ACACGTAAGTAGTCTTCTGGATCCCAGCCACACAGCTGCTGACGATAGCATGGTAGTCAG
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Table 9

GA CTGCACCTGACGCGGATGGTGGTTGATCTCCAGAACTGCAGGACTGGGTC
Sequence 3017 found in patent publication WO99/53036
NAAAAAGAAAAACAGGAGTGGCTTTCAAAGCANAAGGAGAATATACAGCATTTC CAAGCA
GAAGAAGAAGCTAACCTTCTTCGACGCCAAAGACAATACCTAGAGCTGGAATGCCGCCGC
TTCAAGAGAAGAATGTTACTTGGGCGTCATACTTAGAGCAGGACCTTGT CAGGGGGAGT
TAAACAAAAGACAGACTCAGAAGGACTTAGAGCATGCCATGCTACTCCGACAGCATGAAT
CTATGCAAGAACTGGAGTTCCGC
Sequence 3018 found in patent publication WO99/61614
TATAGGGCGAATTGGAGCTCCCCGCGGTGGCGGCCGAGGTGAATGCCCTGGATGGGTAT
AACCGAACAGCCCTCCACTATGCAGCAGAGAAAGATGAGGCTTGTGTGGAGGTCCTATTG
GAGTATGGTGC AAAACCCCAATGCTTTGGATGGCAACAGAGATACCCCACTTCACTGGGCA
GCCTTTAAGAACAATGCTGAGTGTGTGCGGGCTCTCCTAGAGAGCGGGGCCTCTGTCAAT
GCCCTGGATTACAACAATGATACACCGCTCAGCTGGGCTGCCATGAAGGAAAATCTTGAG
AGTGTACAGCATCCTTCTGGATTATGGGCGCAGAGGTCANAGTCATCAACCTAATANGCCAG
ACACCCA'CTCCGCGCTGGTGGCTCTGCTAGTCAGGGGACTTGAACAGAGAAAAGANGAC
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Sequence 3019 found in patent publication WO99/57144
CTTTTNTCCTATANGGNTTTTGGNTCTCCACCGCGGTGGCGGCCGAGGTACAGNTTTC
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ACTTGCACGTTTTTATTTCAAAGATCCAACAGGGAGGGCTTTTGTATCTGACCAAGAG
AGGAGCGTTAGACTTTAGCCACAATGCTTTTGAATTGGGCTTCTTAGTTTTGCTAAAAAT
AAANAATCTGGGGCCCTTTTGGCAGAAATGCTTATGCTACTCATTCCTCAACTTTCTT
TCTTCCTTC
Sequence 3020 found in patent publication WO99/53036
CGAGGTACAAAAGCATTAAAGAAATCACTGCTGGAGACTACACCAAAGAGTGAGCACAAAG
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ATGATCACAGCATTAAATGAAATGCTCTCCACACAAGCCCTGCGTTTGGATGAAGCACAGG
AAGCAGAGTGCCAGGTTTTGAAGATGCAGCTGCAGCAGGAAGTGGAGCTGTTGAATGCGT
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AACAGAGGGTCTCCCTCCGAGGGCACTCTTAGAANAAAAGNTNGAAGAAGAGATGTT
Sequence 3021 found in patent publication WO99/64576
CCGGGCAGGGTACCCATTTAATATACTATGATGCACTTAAATTGAAGCTATGCCACAGG
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AAAAAAATTCCTAATGCCTTTTAGCCTTCTTTAATATTTTTAGGTAAGGAAAGTATGTTT
GGATTTTTTCTCTTTGTAGGTATATGAGATTGAAATGTGAAGTATTTGGACAACAAACG
TCAAGCAATGGGAAGCCATTTTGATTTCTTGAGTAATCTTGTAAGCATTAAAGTGAATGAC
AAAGTAGTAGTGAACCTATTTCCTATGTTATAACTTCAGTCAATTAATATAAGGATAGT
TTTTGTTGTATGTTCACTAAGTGTTAATATAATAGCCATTGAATATACTAATCTTTCAT
CTTAGAGAACTATAACAACCTTTTATTGTTTCTTAATGGGAACATTCTGGCTAACAAGAAAA
AGTGAGAAAAGTAGTACCTCGGC
Sequence 3022 found in patent publication WO99/53051
CCGCGGTGGCGGCCGAGGTACAGAAAAATAAGTAGAATAACAAAGTTCCTAGTTTTGTG
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CAACACGAGGGGGCTCTGGTGACAGGACATGACACTGCACAATCAGAGATCACAGCGAA
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Table 9

Sequence 3023 found in patent publication WO99/63088
 CCGGGCAGGTACCCAGTTAAGGGTCCAGAAGAGCCCCAGGACCCCATAGATTTGCAGATT
 GAAGACAGAACGTTGGATTAGGCCTTTGGATGAGTAGCCGTGGAAGACGCACATCAGCCC
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 CTCACAGCCGGGGGAGCTGATGTTGGATGCCAGAGCACATACTGGGGTTGCCCCGATGT
 AGCCAGGTACCT

Sample #	Accession #	Sequence	Accession #
Sequence 3024	AA417652	Sequence 3068	AA156509
Sequence 3025	AA126614	Sequence 3069	AA315666
Sequence 3026	AA330753	Sequence 3070	AI338594
Sequence 3027	AI309431	Sequence 3071	AA399208
Sequence 3028	AA043659	Sequence 3072	AA464763
Sequence 3029	AA192604	Sequence 3073	AA314555
Sequence 3030	AL036415	Sequence 3074	AA095651
Sequence 3031	H53231	Sequence 3075	AI124525
Sequence 3032	AA503949	Sequence 3076	AA662208
Sequence 3033	R71822	Sequence 3077	AI911496
Sequence 3034	AI127918	Sequence 3078	H60504
Sequence 3035	AA292373	Sequence 3079	AA857872
Sequence 3036	AA331429	Sequence 3080	AA011613
Sequence 3037	H18735	Sequence 3081	AA165490
Sequence 3038	AA361157	Sequence 3082	AA533372
Sequence 3039	T33066	Sequence 3083	AI935533
Sequence 3040	AW188539	Sequence 3084	AA668164
Sequence 3041	AA253323	Sequence 3085	AA361821
Sequence 3042	AA789292	Sequence 3086	D81625
Sequence 3043	AA135903	Sequence 3087	AA295348
Sequence 3044	AA455853	Sequence 3088	H46448
Sequence 3045	AA248319	Sequence 3089	T06037
Sequence 3046	AI253336	Sequence 3090	AA911035
Sequence 3047	AA115426	Sequence 3091	AA235178
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Sequence 3049	AI371735	Sequence 3093	AI280751
Sequence 3050	AA127348	Sequence 3094	AI719184
Sequence 3051	AI223085	Sequence 3095	AI262380
Sequence 3052	AA015628	Sequence 3096	AA535888
Sequence 3053	AA554751	Sequence 3097	AI207370
Sequence 3054	AA285103	Sequence 3098	AL048693
Sequence 3055	AA189000	Sequence 3099	AA557619
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Sequence 3058	AA490577	Sequence 3102	AA679592
Sequence 3059	AI735683	Sequence 3103	AL036180
Sequence 3060	AA834004	Sequence 3104	AI128053
Sequence 3061	AA569064	Sequence 3105	AA885430
Sequence 3062	AA486674	Sequence 3106	AA306173
Sequence 3063	AA495759	Sequence 3107	AI205060
Sequence 3064	AA722847	Sequence 3108	AA469070
Sequence 3065	AA430731	Sequence 3109	AL048962
Sequence 3066	AA527298	Sequence 3110	AA777098
Sequence 3067	AA177092	Sequence 3111	AW135564
		Sequence 3112	AA351514

Table 9

Sequence 3113	N45538	Sequence 3165	AA761101
Sequence 3114	AI523289	Sequence 3166	AL038502
Sequence 3115	AI125606	Sequence 3167	AA336387
Sequence 3116	AL036319	Sequence 3168	AA220948
Sequence 3117	AA313983	Sequence 3169	AA448990
Sequence 3118	AA134203	Sequence 3170	AA143001
Sequence 3119	AA453778	Sequence 3171	AA719975
Sequence 3120	AI253367	Sequence 3172	AA305118
Sequence 3121	H66108	Sequence 3173	AA410496
Sequence 3122	AA655034	Sequence 3174	AA374359
Sequence 3123	AA339277	Sequence 3175	AA335368
Sequence 3124	AA779966	Sequence 3176	AI217499
Sequence 3125	AA883590	Sequence 3177	N48436
Sequence 3126	AI089394	Sequence 3178	AI627332
Sequence 3127	AI916533	Sequence 3179	H05377
Sequence 3128	AA485853	Sequence 3180	AI525843
Sequence 3129	AA420523	Sequence 3181	AI683279
Sequence 3130	AA931996	Sequence 3182	AA344707
Sequence 3131	W94994	Sequence 3183	AA344287
Sequence 3132	AA525938	Sequence 3184	AA583067
Sequence 3133	AA430516	Sequence 3185	AA296881
Sequence 3134	N40017	Sequence 3186	AA187659
Sequence 3135	AA553486	Sequence 3187	AA307578
Sequence 3136	AA244050	Sequence 3188	AI634794
Sequence 3137	R89382	Sequence 3189	AA378787
Sequence 3138	AA631460	Sequence 3190	AA702182
Sequence 3139	AI253300	Sequence 3191	AA204865
Sequence 3140	AA093526	Sequence 3192	R09719
Sequence 3141	AA327250	Sequence 3193	AA082412
Sequence 3142	AA347581	Sequence 3194	AA767779
Sequence 3143	AI962828	Sequence 3195	AA312849
Sequence 3144	AA092812	Sequence 3196	H43367
Sequence 3145	AA360953	Sequence 3197	AA526483
Sequence 3146	AA677908	Sequence 3198	AI332588
Sequence 3147	AA028008	Sequence 3199	AI597808
Sequence 3148	AA363684	Sequence 3200	AA338793
Sequence 3149	AA908243	Sequence 3201	AA010760
Sequence 3150	AI028658	Sequence 3202	AA084067
Sequence 3151	AA287400	Sequence 3203	AA489243
Sequence 3152	AA505632	Sequence 3204	AI754666
Sequence 3153	AA337280	Sequence 3205	AA364498
Sequence 3154	AI698179	Sequence 3206	AI922665
Sequence 3155	AA314773	Sequence 3207	AI290826
Sequence 3156	T48046	Sequence 3208	AA860984
Sequence 3157	AL120477	Sequence 3209	AA626192
Sequence 3158	AA316721	Sequence 3210	AI139036
Sequence 3159	AA524242	Sequence 3211	AI557112
Sequence 3160	AA337818	Sequence 3212	AI754078
Sequence 3161	N36637	Sequence 3213	AA120813
Sequence 3162	AA054376	Sequence 3214	AA089897
Sequence 3163	AI017574	Sequence 3215	AA398046
Sequence 3164	AA179450	Sequence 3216	AA662736

Table 9

Sequence 3217	AI492934	Sequence 3269	L37385
Sequence 3218	AA307787	Sequence 3270	M74775
Sequence 3219	AA314379	Sequence 3271	AB000516
Sequence 3220	AL037746	Sequence 3272	AB033075
Sequence 3221	AI253337	Sequence 3273	X55654
Sequence 3222	AA074811	Sequence 3274	L38563
Sequence 3223	AI140410	Sequence 3275	AL121740
Sequence 3224	AI053628	Sequence 3276	U15552
Sequence 3225	AI127556	Sequence 3277	AF012073
Sequence 3226	AA431133	Sequence 3278	E02164
Sequence 3227	AA649137	Sequence 3279	M16768
Sequence 3228	AA327546	Sequence 3280	AB023224
Sequence 3229	AA292903	Sequence 3281	AF016270
Sequence 3230	AI357803	Sequence 3282	D37991
Sequence 3231	AA779747	Sequence 3283	AF103775
Sequence 3232	D44747	Sequence 3284	AB022656
Sequence 3233	AA481979	Sequence 3285	AB028624
Sequence 3234	AI203141	Sequence 3286	D38305
Sequence 3235	AI691046	Sequence 3287	U58855
Sequence 3236	AA044089	Sequence 3288	D87470
Sequence 3237	AA522445	Sequence 3289	Z74615
Sequence 3238	AA186479	Sequence 3290	X15987
Sequence 3239	AA568922	Sequence 3291	AF131848
Sequence 3240	AI207546	Sequence 3292	U96627
Sequence 3241	AL119371	Sequence 3293	AB033078
Sequence 3242	AA430305	Sequence 3294	AF153201
Sequence 3243	AA149492	Sequence 3295	AB016488
Sequence 3244	AA193101	Sequence 3296	J02683
Sequence 3245	AI252084	Sequence 3297	U23028
Sequence 3246	AA085509	Sequence 3298	M81757
Sequence 3247	AA988107	Sequence 3299	AB008109
Sequence 3248	AI802032	Sequence 3300	X74104
Sequence 3249	AA346556	Sequence 3301	AF038392
Sequence 3250	AA188088	Sequence 3302	AL096881
Sequence 3251	AA609538	Sequence 3303	AF070556
Sequence 3252	AA195832	Sequence 3304	AF072860
Sequence 3253	AA058410	Sequence 3305	X59405
Sequence 3254	AL040479	Sequence 3306	L16510
Sequence 3255	AA152027	Sequence 3307	AF067299
Sequence 3256	AA037181	Sequence 3308	D17409
Sequence 3257	AA127162	Sequence 3309	X59303
Sequence 3258	AA315762	Sequence 3310	AB002346
Sequence 3259	AA044765	Sequence 3311	X15187
Sequence 3260	AA971857	Sequence 3312	M25316
Sequence 3261	AA194538	Sequence 3313	AF086484
Sequence 3262	AA826015	Sequence 3314	AF092922
Sequence 3263	AL041059	Sequence 3315	U05875
Sequence 3264	AA083182	Sequence 3316	D86961
Sequence 3265	AA719663	Sequence 3317	L39000
Sequence 3266	W80983	Sequence 3318	AB033055
Sequence 3267	AB002382	Sequence 3319	AB003333
Sequence 3268	AF070661	Sequence 3320	E03565

Table 9

Sequence 3321	L38565	Sequence 3362	X87613
Sequence 3322	L14076	Sequence 3363	AF086510
Sequence 3323	AL122082	Sequence 3364	AF039918
Sequence 3324	AF044957	Sequence 3365	AF117255
Sequence 3325	AB011079	Sequence 3366	L34673
Sequence 3326	D50310	Sequence 3367	X59766
Sequence 3327	D16911	Sequence 3368	AF115359
Sequence 3328	M12267	Sequence 3369	M29469
Sequence 3329	M27937	Sequence 3370	AF153605
Sequence 3330	U02032	Sequence 3371	X04236
Sequence 3331	Y18207	Sequence 3372	AB023216
Sequence 3332	AB018302	Sequence 3373	M76482
Sequence 3333	M58549	Sequence 3374	Y17175
Sequence 3334	AB020669	Sequence 3375	AF087693
Sequence 3335	S42404	Sequence 3376	E01198
Sequence 3336	AB022663	Sequence 3377	AL050265
Sequence 3337	D13639	Sequence 3378	X57820
Sequence 3338	AF000367	Sequence 3379	D88674
Sequence 3339	M14662	Sequence 3380	X52022
Sequence 3340	AF026381	Sequence 3381	AF040704
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Sequence 3342	U60206	Sequence 3383	AL049219
Sequence 3343	Y00345	Sequence 3384	AF162704
Sequence 3344	D78134	Sequence 3385	AL117602
Sequence 3345	S73145	Sequence 3386	J00196
Sequence 3346	AF020340	Sequence 3387	M25756
Sequence 3347	U15008	Sequence 3388	D14658
Sequence 3348	AF094517	Sequence 3389	E02651
Sequence 3349	X94910	Sequence 3390	AF026030
Sequence 3350	L36151	Sequence 3391	M60627
Sequence 3351	AB033104	Sequence 3392	U18937
Sequence 3352	M32011	Sequence 3393	J03934
Sequence 3353	U82938	Sequence 3394	X65614
Sequence 3354	AF038955	Sequence 3395	AL050274
Sequence 3355	AF057160	Sequence 3396	Q55004
Sequence 3356	D38551	Sequence 3397	X15000
Sequence 3357	AJ012375	Sequence 3398	Z34097
Sequence 3358	U06632	Sequence 3399	Z13355
Sequence 3359	M73547	Sequence 3400	Z40831
Sequence 3360	X02761	Sequence 3401	X37385
Sequence 3361	J04080		

Sequence 3402 found in patent publication WO99/64576
GCGAATNGGAGCTCCCCGCGGTGGCGGCCCGCCGNCAGGTTGGTGAAAGGAATGAAGC
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Table 9

Sequence 3403 found in patent publication WO99/54460
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Sequence #	Accession#	Sequence 3447	AI185092
Sequence 3404	AA873272	Sequence 3448	AI042524
Sequence 3405	AA022896	Sequence 3449	AA894775
Sequence 3406	AA047432	Sequence 3450	H93264
Sequence 3407	AA297327	Sequence 3451	AA179887
Sequence 3408	AA129205	Sequence 3452	AI016587
Sequence 3409	AW008483	Sequence 3453	AA913592
Sequence 3410	AA513183	Sequence 3454	T65174
Sequence 3411	AI816261	Sequence 3455	AA165521
Sequence 3412	AA526767	Sequence 3456	AA641585
Sequence 3413	AW150827	Sequence 3457	AA652478
Sequence 3414	AA045127	Sequence 3458	H03514
Sequence 3415	AA303085	Sequence 3459	AA305331
Sequence 3416	AA126614	Sequence 3460	AI110866
Sequence 3417	AL041738	Sequence 3461	AI220623
Sequence 3418	AW071784	Sequence 3462	AA133357
Sequence 3419	AW175618	Sequence 3463	AI216978
Sequence 3420	AI418302	Sequence 3464	AI350896
Sequence 3421	AA088197	Sequence 3465	AA369887
Sequence 3422	AA513640	Sequence 3466	AL048670
Sequence 3423	AI684122	Sequence 3467	AI085849
Sequence 3424	W19988	Sequence 3468	AA514409
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Sequence 3426	W94246	Sequence 3470	AA173432
Sequence 3427	AA429190	Sequence 3471	AA652746
Sequence 3428	AA305139	Sequence 3472	R78852
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Sequence 3430	AA730105	Sequence 3474	AL039550
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Sequence 3432	AI312325	Sequence 3476	AI813644
Sequence 3433	AI080314	Sequence 3477	AA083160
Sequence 3434	AA604688	Sequence 3478	AI792319
Sequence 3435	R82830	Sequence 3479	AI863406
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Sequence 3437	AA385573	Sequence 3481	AI253330
Sequence 3438	AI698401	Sequence 3482	AA345522
Sequence 3439	AI611881	Sequence 3483	AA443820
Sequence 3440	AI267602	Sequence 3484	AA308332
Sequence 3441	AA522790	Sequence 3485	F27796
Sequence 3442	AI207546	Sequence 3486	AA644157
Sequence 3443	AA860791	Sequence 3487	AA057400
Sequence 3444	AA430597	Sequence 3488	AI005333
Sequence 3445	AA977234	Sequence 3489	R18733
Sequence 3446	AA417916	Sequence 3490	AI190341

Table 9

Sequence 3491	AI064691	Sequence 3542	AI208910
Sequence 3492	AL035802	Sequence 3543	AA446179
Sequence 3493	AI307504	Sequence 3544	AA292860
Sequence 3494	H50771	Sequence 3545	AA053376
Sequence 3495	AI091190	Sequence 3546	AA292638
Sequence 3496	AA136789	Sequence 3547	AI268369
Sequence 3497	AI061595	Sequence 3548	AA724868
Sequence 3498	AI150089	Sequence 3549	AA864493
Sequence 3499	AI361057	Sequence 3550	AA483368
Sequence 3500	AI745542	Sequence 3551	AA487864
Sequence 3501	AA418249	Sequence 3552	R71893
Sequence 3502	AA308273	Sequence 3553	AA687282
Sequence 3503	AA442385	Sequence 3554	AI588087
Sequence 3504	AA508075	Sequence 3555	AA242932
Sequence 3505	AA314717	Sequence 3556	AA112647
Sequence 3506	AA148250	Sequence 3557	AA971834
Sequence 3507	AA054506	Sequence 3558	AA206540
Sequence 3508	W60565	Sequence 3559	AI697470
Sequence 3509	AI678871	Sequence 3560	AW084936
Sequence 3510	N52198	Sequence 3561	AA319900
Sequence 3511	AL041769	Sequence 3562	AA249154
Sequence 3512	AW015055	Sequence 3563	AA722214
Sequence 3513	AI073373	Sequence 3564	AL079895
Sequence 3514	AI807804	Sequence 3565	AI065003
Sequence 3515	AI267162	Sequence 3566	AA150891
Sequence 3516	AA236449	Sequence 3567	R21012
Sequence 3517	AA639494	Sequence 3568	AI422714
Sequence 3518	AI471455	Sequence 3569	AA111856
Sequence 3519	AI064737	Sequence 3570	AA385768
Sequence 3520	AI865433	Sequence 3571	W56680
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Sequence 3522	AI760450	Sequence 3573	AL110421
Sequence 3523	W17085	Sequence 3574	AI040598
Sequence 3524	AI566845	Sequence 3575	AL043001
Sequence 3525	AA156806	Sequence 3576	AI290232
Sequence 3526	AF150217	Sequence 3577	AA257047
Sequence 3527	AA313983	Sequence 3578	AA481710
Sequence 3528	AA773336	Sequence 3579	AA165027
Sequence 3529	AA927668	Sequence 3580	AA199700
Sequence 3530	N80102	Sequence 3581	AW027339
Sequence 3531	AW189598	Sequence 3582	AA143001
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Sequence 3533	AA573912	Sequence 3584	N93894
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Sequence 3535	AI632544	Sequence 3586	AA984172
Sequence 3536	AI371617	Sequence 3587	AA862285
Sequence 3537	AA421772	Sequence 3588	AI678594
Sequence 3538	AA357592	Sequence 3589	AA340913
Sequence 3539	AW026300	Sequence 3590	AA535273
Sequence 3540	AW023392	Sequence 3591	AI084791
Sequence 3541	AA453075	Sequence 3592	AI732534

Table 9

Sequence 3593	AA583051	Sequence 3644	AA442530
Sequence 3594	AA190873	Sequence 3645	AA397572
Sequence 3595	AI085369	Sequence 3646	AA642987
Sequence 3596	AA448951	Sequence 3647	AA573950
Sequence 3597	AW104310	Sequence 3648	AA156269
Sequence 3598	R72145	Sequence 3649	AA502307
Sequence 3599	W47107	Sequence 3650	W52418
Sequence 3600	AA196338	Sequence 3651	AA486673
Sequence 3601	AA769876	Sequence 3652	AA312860
Sequence 3602	AA725340	Sequence 3653	AI417767
Sequence 3603	AI628354	Sequence 3654	AA235108
Sequence 3604	AA968843	Sequence 3655	AA760913
Sequence 3605	AI357472	Sequence 3656	AA152396
Sequence 3606	AA281088	Sequence 3657	AA101674
Sequence 3607	AA022614	Sequence 3658	AA740186
Sequence 3608	AA284291	Sequence 3659	AA186967
Sequence 3609	AI879268	Sequence 3660	AA234130
Sequence 3610	AA992262	Sequence 3661	R20225
Sequence 3611	AI915895	Sequence 3662	AI567426
Sequence 3612	AA625521	Sequence 3663	AA449264
Sequence 3613	AI922425	Sequence 3664	AI688574
Sequence 3614	H93906	Sequence 3665	AA507472
Sequence 3615	AW150121	Sequence 3666	AA425400
Sequence 3616	N41324	Sequence 3667	AW179017
Sequence 3617	AA173657	Sequence 3668	AA318347
Sequence 3618	AL037904	Sequence 3669	AI887619
Sequence 3619	AI207272	Sequence 3670	AI264172
Sequence 3620	AI743595	Sequence 3671	AA331513
Sequence 3621	AA330619	Sequence 3672	AA176968
Sequence 3622	AA195384	Sequence 3673	AA732820
Sequence 3623	H13891	Sequence 3674	AA319508
Sequence 3624	W24708	Sequence 3675	AA906921
Sequence 3625	AI027521	Sequence 3676	AI267416
Sequence 3626	AA227782	Sequence 3677	AA535496
Sequence 3627	AI332588	Sequence 3678	AI093195
Sequence 3628	AI267185	Sequence 3679	AA020956
Sequence 3629	AA806336	Sequence 3680	AI670009
Sequence 3630	AA046911	Sequence 3681	AI799521
Sequence 3631	AA627916	Sequence 3682	R71822
Sequence 3632	AW084003	Sequence 3683	AA236418
Sequence 3633	AW137691	Sequence 3684	AA448600
Sequence 3634	AA029915	Sequence 3685	AA608738
Sequence 3635	AI033991	Sequence 3686	AA004655
Sequence 3636	AI039149	Sequence 3687	AA425024
Sequence 3637	AA170808	Sequence 3688	AI888319
Sequence 3638	AA617772	Sequence 3689	AA493375
Sequence 3639	AA063589	Sequence 3690	AA304611
Sequence 3640	AA084560	Sequence 3691	AA325821
Sequence 3641	AI276576	Sequence 3692	AA975564
Sequence 3642	AW014416	Sequence 3693	AI862012
Sequence 3643	AI970797	Sequence 3694	AI123348

Table 9

Sequence 3695	AI668915	Sequence 3746	AA188171
Sequence 3696	AA236245	Sequence 3747	N36611
Sequence 3697	AA112161	Sequence 3748	AA827779
Sequence 3698	AA417872	Sequence 3749	AA134565
Sequence 3699	AL037800	Sequence 3750	R61601
Sequence 3700	AA526498	Sequence 3751	W95541
Sequence 3701	AA147836	Sequence 3752	AI523897
Sequence 3702	H14449	Sequence 3753	AA582093
Sequence 3703	AI216972	Sequence 3754	AA465612
Sequence 3704	AI675880	Sequence 3755	AA769006
Sequence 3705	AI360163	Sequence 3756	W03938
Sequence 3706	N98691	Sequence 3757	AI128216
Sequence 3707	AI968379	Sequence 3758	AA152420
Sequence 3708	AA292235	Sequence 3759	AA700643
Sequence 3709	AA166890	Sequence 3760	AA921913
Sequence 3710	AA947616	Sequence 3761	AI188505
Sequence 3711	AI499393	Sequence 3762	H99888
Sequence 3712	AA196048	Sequence 3763	AI807894
Sequence 3713	AA708159	Sequence 3764	AA321244
Sequence 3714	AA702091	Sequence 3765	AA400214
Sequence 3715	AA922091	Sequence 3766	AA026757
Sequence 3716	AI025537	Sequence 3767	R15973
Sequence 3717	AA654320	Sequence 3768	AA600831
Sequence 3718	AW176113	Sequence 3769	AI278235
Sequence 3719	AI114651	Sequence 3770	AA527187
Sequence 3720	AA057021	Sequence 3771	AA027803
Sequence 3721	AA324478	Sequence 3772	AA410888
Sequence 3722	AA130162	Sequence 3773	AW015647
Sequence 3723	AI207528	Sequence 3774	AA315723
Sequence 3724	AA564080	Sequence 3775	AI280561
Sequence 3725	AA100746	Sequence 3776	AA426281
Sequence 3726	AA224260	Sequence 3777	AA081869
Sequence 3727	AI077912	Sequence 3778	AI085965
Sequence 3728	AL045794	Sequence 3779	AA210796
Sequence 3729	AA296780	Sequence 3780	AI082230
Sequence 3730	AA449055	Sequence 3781	AI791618
Sequence 3731	AA557177	Sequence 3782	AL048669
Sequence 3732	AI446497	Sequence 3783	AA725348
Sequence 3733	AA490647	Sequence 3784	AI700750
Sequence 3734	AA428879	Sequence 3785	AI498067
Sequence 3735	AA768348	Sequence 3786	H75980
Sequence 3736	AA018946	Sequence 3787	AI791322
Sequence 3737	AA450189	Sequence 3788	AA868396
Sequence 3738	AI360989	Sequence 3789	AA393526
Sequence 3739	AI375672	Sequence 3790	AI479671
Sequence 3740	W72771	Sequence 3791	AI065099
Sequence 3741	F21808	Sequence 3792	AA936632
Sequence 3742	AI743923	Sequence 3793	H71793
Sequence 3743	AL121433	Sequence 3794	AA469320
Sequence 3744	W73463	Sequence 3795	AI829770
Sequence 3745	AA633276	Sequence 3796	AA326500

Table 9

Sequence 3797	AI270183	Sequence 3848	AA033724
Sequence 3798	AI278800	Sequence 3849	AA604620
Sequence 3799	N36813	Sequence 3850	AA313223
Sequence 3800	W91946	Sequence 3851	C04016
Sequence 3801	AI336501	Sequence 3852	AI057124
Sequence 3802	AF001541	Sequence 3853	AA314146
Sequence 3803	R54765	Sequence 3854	AA420705
Sequence 3804	AA846605	Sequence 3855	AI191009
Sequence 3805	AA493962	Sequence 3856	AI174824
Sequence 3806	AW150935	Sequence 3857	AI253436
Sequence 3807	AA527359	Sequence 3858	AA025875
Sequence 3808	AI859619	Sequence 3859	AI253335
Sequence 3809	R12140	Sequence 3860	AI457133
Sequence 3810	N40852	Sequence 3861	AI935290
Sequence 3811	AA164612	Sequence 3862	AA203313
Sequence 3812	AI951767	Sequence 3863	D55616
Sequence 3813	AI983317	Sequence 3864	AA514395
Sequence 3814	AA155640	Sequence 3865	AA075984
Sequence 3815	AA305436	Sequence 3866	AA283714
Sequence 3816	AA205470	Sequence 3867	AI131470
Sequence 3817	AI025023	Sequence 3868	AA376346
Sequence 3818	AL046863	Sequence 3869	N98569
Sequence 3819	AA199717	Sequence 3870	T54237
Sequence 3820	AA632875	Sequence 3871	AA772570
Sequence 3821	AA541651	Sequence 3872	AL037802
Sequence 3822	AA634203	Sequence 3873	AI436057
Sequence 3823	D79053	Sequence 3874	AA130201
Sequence 3824	C03757	Sequence 3875	AI460220
Sequence 3825	AA256095	Sequence 3876	AI743389
Sequence 3826	AI668594	Sequence 3877	AI160151
Sequence 3827	AA400384	Sequence 3878	AA156152
Sequence 3828	H03589	Sequence 3879	AW083729
Sequence 3829	AI373463	Sequence 3880	AI751039
Sequence 3830	AL080000	Sequence 3881	AI911944
Sequence 3831	AI280779	Sequence 3882	AA694055
Sequence 3832	AA494410	Sequence 3883	AA722556
Sequence 3833	AA176146	Sequence 3884	F07245
Sequence 3834	AW050527	Sequence 3885	AI362355
Sequence 3835	AA133199	Sequence 3886	AI127673
Sequence 3836	AI668620	Sequence 3887	AI800001
Sequence 3837	AI318569	Sequence 3888	AW132039
Sequence 3838	AI310723	Sequence 3889	AW014590
Sequence 3839	AA298773	Sequence 3890	AL036565
Sequence 3840	AA335579	Sequence 3891	AA885725
Sequence 3841	AA291790	Sequence 3892	AA088544
Sequence 3842	AA631776	Sequence 3893	T84212
Sequence 3843	AA315948	Sequence 3894	H79327
Sequence 3844	AI679226	Sequence 3895	AI745234
Sequence 3845	AA306982	Sequence 3896	AA808907
Sequence 3846	N76455	Sequence 3897	AA436277
Sequence 3847	AI460030	Sequence 3898	AA247453

Table 9

Sequence 3899	AI480219	Sequence 3950	AA335552
Sequence 3900	AA187639	Sequence 3951	AA456900
Sequence 3901	AI339455	Sequence 3952	AA147871
Sequence 3902	H80244	Sequence 3953	AI684615
Sequence 3903	AI148561	Sequence 3954	AI355260
Sequence 3904	AA832521	Sequence 3955	AI417979
Sequence 3905	AA399390	Sequence 3956	AA994973
Sequence 3906	AI929696	Sequence 3957	AA167750
Sequence 3907	AA155999	Sequence 3958	AA643660
Sequence 3908	AA411585	Sequence 3959	AA470067
Sequence 3909	AI940492	Sequence 3960	AA437070
Sequence 3910	AA828862	Sequence 3961	AA497052
Sequence 3911	AI650830	Sequence 3962	AI820745
Sequence 3912	AI262932	Sequence 3963	AA348532
Sequence 3913	AA368686	Sequence 3964	AA641263
Sequence 3914	AA278595	Sequence 3965	AA083300
Sequence 3915	AL037888	Sequence 3966	AA173526
Sequence 3916	AA431858	Sequence 3967	AI940351
Sequence 3917	H57382	Sequence 3968	AA225857
Sequence 3918	AA181902	Sequence 3969	AA974021
Sequence 3919	AA564296	Sequence 3970	U56725
Sequence 3920	AA327333	Sequence 3971	M64082
Sequence 3921	AI280149	Sequence 3972	AF060231
Sequence 3922	AI126461	Sequence 3973	U15085
Sequence 3923	AA411736	Sequence 3974	L22453
Sequence 3924	AI349614	Sequence 3975	X62534
Sequence 3925	AI472243	Sequence 3976	M14574
Sequence 3926	AA399070	Sequence 3977	D90226
Sequence 3927	AA193414	Sequence 3978	AB017363
Sequence 3928	AA663188	Sequence 3979	AL122075
Sequence 3929	AI026839	Sequence 3980	M11428
Sequence 3930	AI751017	Sequence 3981	U51678
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Sequence 3932	AA234434	Sequence 3983	J05068
Sequence 3933	AI002715	Sequence 3984	D23662
Sequence 3934	AA437198	Sequence 3985	M11233
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Sequence 3936	AI217114	Sequence 3987	J02908
Sequence 3937	AI538989	Sequence 3988	AF002020
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Sequence 3939	N44337	Sequence 3990	AB028971
Sequence 3940	AA641504	Sequence 3991	M27635
Sequence 3941	AI499986	Sequence 3992	U34877
Sequence 3942	AI535656	Sequence 3993	AB014523
Sequence 3943	AA700127	Sequence 3994	U38784
Sequence 3944	H43348	Sequence 3995	L19185
Sequence 3945	AL044967	Sequence 3996	K02765
Sequence 3946	AA259189	Sequence 3997	AF032103
Sequence 3947	AI143187	Sequence 3998	D16366
Sequence 3948	AL037724	Sequence 3999	U04441
Sequence 3949	AA709383	Sequence 4000	X00497

Table 9

Sequence 4001	AB020721	Sequence 4052	X54326
Sequence 4002	D90453	Sequence 4053	AB011113
Sequence 4003	E01979	Sequence 4054	AF124491
Sequence 4004	AB002375	Sequence 4055	AF050641
Sequence 4005	M20681	Sequence 4056	AF063737
Sequence 4006	AL117550	Sequence 4057	D63480
Sequence 4007	M83246	Sequence 4058	X00568
Sequence 4008	D86982	Sequence 4059	AF045653
Sequence 4009	A18657	Sequence 4060	L06132
Sequence 4010	AF098786	Sequence 4061	L35249
Sequence 4011	AF063613	Sequence 4062	J00199
Sequence 4012	AF043472	Sequence 4063	AF047448
Sequence 4013	AB029037	Sequence 4064	M17846
Sequence 4014	D31764	Sequence 4065	AF016270
Sequence 4015	U03886	Sequence 4066	AF044671
Sequence 4016	M62831	Sequence 4067	AF167570
Sequence 4017	AF112227	Sequence 4068	AF077034
Sequence 4018	AL049455	Sequence 4069	M37583
Sequence 4019	AF039698	Sequence 4070	AF039564
Sequence 4020	J03483	Sequence 4071	Z13009
Sequence 4021	D86962	Sequence 4072	L19597
Sequence 4022	U35139	Sequence 4073	J02943
Sequence 4023	M14219	Sequence 4074	U01923
Sequence 4024	D87450	Sequence 4075	J05176
Sequence 4025	U75679	Sequence 4076	S52624
Sequence 4026	AB018333	Sequence 4077	L38486
Sequence 4027	AL096719	Sequence 4078	AB017546
Sequence 4028	AF086002	Sequence 4079	E01813
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Sequence 4030	AF145316	Sequence 4081	X74070
Sequence 4031	AB000221	Sequence 4082	Z22534
Sequence 4032	U96759	Sequence 4083	U12404
Sequence 4033	M38690	Sequence 4084	U14971
Sequence 4034	L19711	Sequence 4085	AL117472
Sequence 4035	L13698	Sequence 4086	AB007954
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Sequence 4038	X60489	Sequence 4089	X04701
Sequence 4039	E03413	Sequence 4090	AF038172
Sequence 4040	U33760	Sequence 4091	U57091
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Sequence 4043	AF100745	Sequence 4094	M69238
Sequence 4044	L11066	Sequence 4095	AF077203
Sequence 4045	D31767	Sequence 4096	AB002305
Sequence 4046	AB022654	Sequence 4097	AF141201
Sequence 4047	AF071884	Sequence 4098	U47101
Sequence 4048	AF092563	Sequence 4099	S57235
Sequence 4049	AF151810	Sequence 4100	M16765
Sequence 4050	AF131802	Sequence 4101	U38894
Sequence 4051	L07615	Sequence 4102	AF089747

Table 9

Sequence 4103	L14599	Sequence 4154	U67085
Sequence 4104	AF047442	Sequence 4155	L19605
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Sequence 4106	U12789	Sequence 4157	X87949
Sequence 4107	M69136	Sequence 4158	AF086182
Sequence 4108	D37985	Sequence 4159	D45887
Sequence 4109	J03210	Sequence 4160	AF016371
Sequence 4110	M25756	Sequence 4161	AF035304
Sequence 4111	X13839	Sequence 4162	S77601
Sequence 4112	AB007854	Sequence 4163	X17206
Sequence 4113	AB023216	Sequence 4164	U67171
Sequence 4114	AB011134	Sequence 4165	M75126
Sequence 4115	AL109722	Sequence 4166	U94831
Sequence 4116	J05192	Sequence 4167	L42176
Sequence 4117	AB032971	Sequence 4168	AF141293
Sequence 4118	M19961	Sequence 4169	AB029008
Sequence 4119	AL117415	Sequence 4170	M24630
Sequence 4120	X82456	Sequence 4171	AL117644
Sequence 4121	AF149045	Sequence 4172	E00195
Sequence 4122	AB007916	Sequence 4173	D49490
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Sequence 4125	AF147331	Sequence 4176	M33146
Sequence 4126	AL050255	Sequence 4177	D83077
Sequence 4127	AF022184	Sequence 4178	AF132968
Sequence 4128	M30393	Sequence 4179	X57811
Sequence 4129	M11887	Sequence 4180	AL117561
Sequence 4130	X69111	Sequence 4181	AF052155
Sequence 4131	M14630	Sequence 4182	AF153821
Sequence 4132	U21847	Sequence 4183	X57398
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Sequence 4135	AF065388	Sequence 4186	X14723
Sequence 4136	AF077048	Sequence 4187	L11566
Sequence 4137	U14394	Sequence 4188	D26129
Sequence 4138	D42047	Sequence 4189	AL050290
Sequence 4139	AF027299	Sequence 4190	AB014552
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Sequence 4142	X51345	Sequence 4193	AL110210
Sequence 4143	AF131762	Sequence 4194	J00200
Sequence 4144	K01171	Sequence 4195	M14354
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Sequence 4146	D14662	Sequence 4197	AF105267
Sequence 4147	AL121740	Sequence 4198	AJ224172
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Sequence 4149	AB023191	Sequence 4200	AB015331
Sequence 4150	AF070668	Sequence 4201	X66029
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Sequence 4152	AB033014	Sequence 4203	M27971
Sequence 4153	M11867	Sequence 4204	AF005482

Table 9

Sequence 4205	X60656	Sequence 4256	AF086330
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Sequence 4209	D63475	Sequence 4260	S70290
Sequence 4210	D90209	Sequence 4261	J02611
Sequence 4211	AL080118	Sequence 4262	L08246
Sequence 4212	AF174028	Sequence 4263	U09825
Sequence 4213	D78013	Sequence 4264	M15841
Sequence 4214	AF068754	Sequence 4265	M14794
Sequence 4215	X79440	Sequence 4266	U68140
Sequence 4216	M76729	Sequence 4267	AF077052
Sequence 4217	A17546	Sequence 4268	AL117560
Sequence 4218	J02871	Sequence 4269	U19869
Sequence 4219	AL050198	Sequence 4270	U14972
Sequence 4220	AF086503	Sequence 4271	L15702
Sequence 4221	M69043	Sequence 4272	AL117609
Sequence 4222	L12136	Sequence 4273	L42531
Sequence 4223	X57802	Sequence 4274	AB004066
Sequence 4224	L05093	Sequence 4275	AF075019
Sequence 4225	X06747	Sequence 4276	AB019527
Sequence 4226	D11428	Sequence 4277	X58072
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Sequence 4228	M16279	Sequence 4279	U25182
Sequence 4229	AF017305	Sequence 4280	AF065391
Sequence 4230	S77154	Sequence 4281	X04412
Sequence 4231	U33837	Sequence 4282	X55122
Sequence 4232	X05790	Sequence 4283	M96803
Sequence 4233	L07033	Sequence 4284	AB023197
Sequence 4234	X56351	Sequence 4285	U18919
Sequence 4235	AF131810	Sequence 4286	D63486
Sequence 4236	AF097362	Sequence 4287	D26350
Sequence 4237	AB032953	Sequence 4288	AF083190
Sequence 4238	M84443	Sequence 4289	AF151874
Sequence 4239	Y11709	Sequence 4290	AL049949
Sequence 4240	U72511	Sequence 4291	D26068
Sequence 4241	M10036	Sequence 4292	X06401
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Sequence 4245	D45915	Sequence 4296	AF001893
Sequence 4246	X51445	Sequence 4297	U68758
Sequence 4247	U28249	Sequence 4298	X16064
Sequence 4248	D90427	Sequence 4299	AL109672
Sequence 4249	AF096774	Sequence 4300	AJ001306
Sequence 4250	U18121	Sequence 4301	L20298
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Sequence 4252	M60457	Sequence 4303	AJ224741
Sequence 4253	AF130867	Sequence 4304	AB033074
Sequence 4254	Z69043	Sequence 4305	AB018271
Sequence 4255	X04297	Sequence 4306	M10906

Table 9

Sequence 4307	U76456	Sequence 4335	T79274
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Sequence 4311	AF153979	Sequence 4339	Z42246
Sequence 4312	D14696	Sequence 4340	Z27235
Sequence 4313	AF086557	Sequence 4341	V34157
Sequence 4314	AF155116	Sequence 4342	V26460
Sequence 4315	X94754	Sequence 4343	V23109
Sequence 4316	X00457	Sequence 4344	T91165
Sequence 4317	AJ002955	Sequence 4345	X83330
Sequence 4318	D87995	Sequence 4346	X27341
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Sequence 4321	V30916	Sequence 4349	V60015
Sequence 4322	Z38061	Sequence 4350	T45981
Sequence 4323	V89518	Sequence 4351	V59661
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Sequence 4326	V01882	Sequence 4354	X37385
Sequence 4327	Z41952	Sequence 4355	T45982
Sequence 4328	X33941	Sequence 4356	V34242
Sequence 4329	Z42892	Sequence 4357	Q44224
Sequence 4330	X22244	Sequence 4358	T18551
Sequence 4331	V17906	Sequence 4359	V11636
Sequence 4332	Z12586	Sequence 4360	X04350
Sequence 4333	V04202	Sequence 4361	X90442
Sequence 4334	X84201	Sequence 4362	V19980

Sequence 4363 found in patent publication WO99/55721

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Sequence 4364 found in patent publication US6017710

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Sequence 4365 found in patent publication WO99/67377

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Table 9

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Sequence 4366 found in patent publication WO99/57132

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Sequence 4367 found in patent publication WO99/61471

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Sequence 4368 found in patent publication WO99/63088

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Sequence 4376	AI000795	Sequence 4397	AA491810
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Sequence 4384	AI798946	Sequence 4405	AA025432
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Table 9

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Sequence 4431	AA812966	Sequence 4483	AA309546
Sequence 4432	AA252446	Sequence 4484	T58168
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Sequence 4434	AA789013	Sequence 4486	AA682910
Sequence 4435	W19759	Sequence 4487	AA147832
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Sequence 4441	AI363118	Sequence 4493	AA312584
Sequence 4442	AA716094	Sequence 4494	AA323639
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Sequence 4458	AI929694	Sequence 4510	AA095478
Sequence 4459	AI133671	Sequence 4511	AA740986
Sequence 4460	H09646	Sequence 4512	AI061649
Sequence 4461	AA813244	Sequence 4513	AA287397

Table 9

Sequence 4514	N92095	Sequence 4566	AA078823
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Sequence 4526	AA102835	Sequence 4578	H67938
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Sequence 4528	AI417334	Sequence 4580	AA436423
Sequence 4529	AA214617	Sequence 4581	AI242187
Sequence 4530	AA093289	Sequence 4582	AA122325
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Sequence 4533	AI364112	Sequence 4585	AA115656
Sequence 4534	AA075664	Sequence 4586	AA568401
Sequence 4535	AA313503	Sequence 4587	AI289066
Sequence 4536	AA714830	Sequence 4588	AA215962
Sequence 4537	AI133330	Sequence 4589	AI133489
Sequence 4538	AI630505	Sequence 4590	AA402974
Sequence 4539	AA847784	Sequence 4591	AI471995
Sequence 4540	AI970562	Sequence 4592	H18140
Sequence 4541	AA843086	Sequence 4593	AA405280
Sequence 4542	W61049	Sequence 4594	AA082661
Sequence 4543	AA248706	Sequence 4595	AI879220
Sequence 4544	AA628929	Sequence 4596	AA022704
Sequence 4545	AA730774	Sequence 4597	AI815610
Sequence 4546	T50615	Sequence 4598	AI719472
Sequence 4547	AI352048	Sequence 4599	AA333526
Sequence 4548	AA361355	Sequence 4600	AL043340
Sequence 4549	AA541537	Sequence 4601	AA010893
Sequence 4550	AI434388	Sequence 4602	AA301096
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Sequence 4552	AA336412	Sequence 4604	AA156927
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Sequence 4554	AA809099	Sequence 4606	AI133401
Sequence 4555	AA307697	Sequence 4607	AA420633
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Sequence 4557	AA323143	Sequence 4609	AA648341
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Sequence 4560	T80845	Sequence 4612	AA029583
Sequence 4561	AA368986	Sequence 4613	AI871602
Sequence 4562	AA043039	Sequence 4614	AA115399
Sequence 4563	AA302225	Sequence 4615	AA932099
Sequence 4564	AA292993	Sequence 4616	H78684
Sequence 4565	AI080141	Sequence 4617	AA258271

Table 9

Sequence 4618	AA295465	Sequence 4670	AA308438
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Sequence 4620	AA702131	Sequence 4672	AA809041
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Sequence 4622	AA031586	Sequence 4674	AA582851
Sequence 4623	AA293047	Sequence 4675	AA572862
Sequence 4624	AA314113	Sequence 4676	AI057281
Sequence 4625	AI051928	Sequence 4677	AA602161
Sequence 4626	AI141749	Sequence 4678	AA421682
Sequence 4627	AA033653	Sequence 4679	AA318185
Sequence 4628	AA570353	Sequence 4680	AA962450
Sequence 4629	AA315311	Sequence 4681	AA464338
Sequence 4630	AA292139	Sequence 4682	AA845639
Sequence 4631	AA534711	Sequence 4683	AA683080
Sequence 4632	AA262111	Sequence 4684	AI762497
Sequence 4633	AA382599	Sequence 4685	AL039472
Sequence 4634	AL037301	Sequence 4686	AA932854
Sequence 4635	R80287	Sequence 4687	AA398015
Sequence 4636	AA194535	Sequence 4688	AI300537
Sequence 4637	AA214710	Sequence 4689	AA031602
Sequence 4638	AI245538	Sequence 4690	AA984744
Sequence 4639	AI052724	Sequence 4691	AA651721
Sequence 4640	AA085570	Sequence 4692	AA047843
Sequence 4641	AW008204	Sequence 4693	AA746587
Sequence 4642	AW025332	Sequence 4694	AA437054
Sequence 4643	AI282669	Sequence 4695	AA411564
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Sequence 4647	AA935560	Sequence 4699	AA339554
Sequence 4648	AI672868	Sequence 4700	AI433157
Sequence 4649	AA743832	Sequence 4701	AA083489
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Sequence 4651	AI095013	Sequence 4703	N27583
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Sequence 4653	AA773760	Sequence 4705	AI525654
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Sequence 4665	AA514999	Sequence 4717	AA167252
Sequence 4666	AA251201	Sequence 4718	AA425458
Sequence 4667	AA789100	Sequence 4719	AA090106
Sequence 4668	AI355448	Sequence 4720	AL037646
Sequence 4669	AA399133	Sequence 4721	AI887964

Table 9

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Sequence 4726	AA238486	Sequence 4778	AA196781
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Sequence 4728	AA135911	Sequence 4780	AA507629
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Sequence 4731	W52675	Sequence 4783	AA037138
Sequence 4732	AA599416	Sequence 4784	AI092436
Sequence 4733	AA491804	Sequence 4785	H04143
Sequence 4734	AI203141	Sequence 4786	AA230271
Sequence 4735	AA203110	Sequence 4787	AA346556
Sequence 4736	AA626097	Sequence 4788	AI283902
Sequence 4737	AI608902	Sequence 4789	AA838117
Sequence 4738	AA363773	Sequence 4790	AI493802
Sequence 4739	AI468028	Sequence 4791	AI635294
Sequence 4740	AA703838	Sequence 4792	AI273083
Sequence 4741	AA192484	Sequence 4793	AA280115
Sequence 4742	AI820995	Sequence 4794	AI683279
Sequence 4743	AI688098	Sequence 4795	AA631191
Sequence 4744	AI050808	Sequence 4796	AI633226
Sequence 4745	AA188195	Sequence 4797	AA437077
Sequence 4746	AA295412	Sequence 4798	R10983
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Table 9

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Sequence 4980	E02904	Sequence 5032	AF042081
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Table 9

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Sequence 5300 found in patent publication WO99/55858

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Table 9

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Sequence 5673	AB014530	Sequence 5725	L37080
Sequence 5674	AF073887	Sequence 5726	M11465
Sequence 5675	AB018309	Sequence 5727	AF035408
Sequence 5676	X59406	Sequence 5728	L12168
Sequence 5677	AF104421	Sequence 5729	AB026833
Sequence 5678	L03162	Sequence 5730	AF052126
Sequence 5679	M55654	Sequence 5731	AF041483
Sequence 5680	X14420	Sequence 5732	AF032103
Sequence 5681	AF027159	Sequence 5733	S56985
Sequence 5682	M30938	Sequence 5734	M21575
Sequence 5683	Z68935	Sequence 5735	S77601
Sequence 5684	M97920	Sequence 5736	L49169
Sequence 5685	L39131	Sequence 5737	Y19188
Sequence 5686	AF077206	Sequence 5738	M15182
Sequence 5687	AF159056	Sequence 5739	L02321
Sequence 5688	AF016004	Sequence 5740	AF191018
Sequence 5689	U12788	Sequence 5741	D79983
Sequence 5690	U35143	Sequence 5742	M17564
Sequence 5691	AJ132637	Sequence 5743	AB022653
Sequence 5692	M26481	Sequence 5744	AF020038
Sequence 5693	AF201077	Sequence 5745	AF052577
Sequence 5694	Y09703	Sequence 5746	AB023164
Sequence 5695	AF052124	Sequence 5747	D11094

Table 9

Sequence 5748	AB007883	Sequence 5800	Y17957
Sequence 5749	AF131829	Sequence 5801	X03069
Sequence 5750	X57809	Sequence 5802	AF087973
Sequence 5751	AB018323	Sequence 5803	AF086161
Sequence 5752	AF097021	Sequence 5804	M12937
Sequence 5753	L14076	Sequence 5805	S60099
Sequence 5754	J02943	Sequence 5806	L08044
Sequence 5755	U03644	Sequence 5807	M14058
Sequence 5756	L09159	Sequence 5808	AF168956
Sequence 5757	L01413	Sequence 5809	U10439
Sequence 5758	Y14738	Sequence 5810	AF092922
Sequence 5759	D87442	Sequence 5811	AF077045
Sequence 5760	L15203	Sequence 5812	D26512
Sequence 5761	U25997	Sequence 5813	AL117412
Sequence 5762	X76105	Sequence 5814	Z11890
Sequence 5763	AF081484	Sequence 5815	X04098
Sequence 5764	U75272	Sequence 5816	U12789
Sequence 5765	AF063711	Sequence 5817	X69089
Sequence 5766	AB020689	Sequence 5818	AF152961
Sequence 5767	AB012910	Sequence 5819	L38951
Sequence 5768	Z11531	Sequence 5820	D01059
Sequence 5769	X73114	Sequence 5821	M27826
Sequence 5770	L16510	Sequence 5822	U52101
Sequence 5771	Z21507	Sequence 5823	X57811
Sequence 5772	Y18007	Sequence 5824	X57802
Sequence 5773	AF067172	Sequence 5825	AF147331
Sequence 5774	AB002362	Sequence 5826	AF110647
Sequence 5775	AF026941	Sequence 5827	M32110
Sequence 5776	X84740	Sequence 5828	D10040
Sequence 5777	D38537	Sequence 5829	D13866
Sequence 5778	X14583	Sequence 5830	U95367
Sequence 5779	AF020833	Sequence 5831	U05598
Sequence 5780	X97065	Sequence 5832	J03241
Sequence 5781	U14968	Sequence 5833	AB033012
Sequence 5782	Y00815	Sequence 5834	AF070649
Sequence 5783	J03037	Sequence 5835	AF035811
Sequence 5784	L22253	Sequence 5836	M11147
Sequence 5785	AF153608	Sequence 5837	Z13009
Sequence 5786	AF077202	Sequence 5838	L05092
Sequence 5787	AF075587	Sequence 5839	E02164
Sequence 5788	M29470	Sequence 5840	AF144755
Sequence 5789	M32315	Sequence 5841	AL133050
Sequence 5790	J03015	Sequence 5842	AL050192
Sequence 5791	AF057160	Sequence 5843	L08441
Sequence 5792	Y14737	Sequence 5844	AB005659
Sequence 5793	AF036241	Sequence 5845	U94855
Sequence 5794	M16247	Sequence 5846	AB018331
Sequence 5795	S70290	Sequence 5847	AL122075
Sequence 5796	AL110183	Sequence 5848	M25246
Sequence 5797	AF017456	Sequence 5849	M22920
Sequence 5798	AF047033	Sequence 5850	M21008
Sequence 5799	L03152	Sequence 5851	Y00282

Table 9

Sequence 5852	M96234	Sequence 5879	AF086336
Sequence 5853	M33376	Sequence 5880	L38562
Sequence 5854	AF151855	Sequence 5881	AF103775
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Sequence 5856	AJ224143	Sequence 5883	U20280
Sequence 5857	X57805	Sequence 5884	X97994
Sequence 5858	AF044961	Sequence 5885	V49655
Sequence 5859	J03817	Sequence 5886	T79274
Sequence 5860	AF151884	Sequence 5887	Q44222
Sequence 5861	U07991	Sequence 5888	Z24645
Sequence 5862	M17885	Sequence 5889	V17906
Sequence 5863	AB021654	Sequence 5890	T86581
Sequence 5864	AF062179	Sequence 5891	X00684
Sequence 5865	M12272	Sequence 5892	Q47374
Sequence 5866	D86985	Sequence 5893	Z00439
Sequence 5867	AF000381	Sequence 5894	V69618
Sequence 5868	AF086178	Sequence 5895	Q78947
Sequence 5869	M87789	Sequence 5896	Z23358
Sequence 5870	L17128	Sequence 5897	Z33949
Sequence 5871	X95404	Sequence 5898	N81638
Sequence 5872	S74681	Sequence 5899	Z42315
Sequence 5873	AF070555	Sequence 5900	X97614
Sequence 5874	M27487	Sequence 5901	T50925
Sequence 5875	U09178	Sequence 5902	X40009
Sequence 5876	J03248	Sequence 5903	Q44224
Sequence 5877	M75139	Sequence 5904	X40654
Sequence 5878	Z68987	Sequence 5905	Z20410

Sequence 5906 found in patent publication WO99/54461
CGCCAGTGTGATGGGATATCTGCAGAATTCGCCCTTAGCGTGGTCGCGGCCGAGGTACAG
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TGCTCAGGCAGAGAAAATGCCACCAGAGCATAGCTTGGGTTCTCGCCACACGTAAGTAGTC
TTCTGGATCCCAAGCCACACAGCTGCTGACGATAGCATGGTAGTCAGCCACTGAGCAGAGC
GGGCAAGCAGCCGCGCTCTCCACAGGAAGTGGAAGTTGCAGCCATCACAGGTCCCATCT
GAGCACGTTCTTGGCAGCAGCAAACTTCCAGGGACAGTTTCTGTGGACTGCACCTGACG
CGGATGGTGGTTGATCTCCAGAACTGCAGGACTGGGTACATCATTGGACCTATAAAAG
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Sequence 5907 found in patent publication WO99/64584
CGCCAGTGTGATGGGATATCTGCAGAATTCGCCCTTAGCGTGGTCGCGGCCGAGGTACT
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TTTTTTTTTNTTTTTTGT

Sequence 5908 found in patent publication WO99/00610
CCCTTAGCGTGGTCGCGGCCCGAGGTACGCGGGGGGAACGCTGGCCTGGGACTAAAGCA
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TTCTAAATCTCTCCCTCCTCTGTTGCTGCCACTAATGCTGATGTCCATGGTCTCTAGCA
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TCCAGGAAGGCGGCCAAGAATGTGAGTGCAAAGATTGGTTCTGAGAGCCCCGAGAAGAA
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Table 9

Sequence 5909 found in patent publication WO99/64594
CGCCAGTGTGATGGGATATCTGCAGAATTCGCCCTTTCGAGCGGCCCGCCCGGGCAGGTA

Sequence 5910 found in patent publication WO99/51727
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TAAGAAAGCCTTTTTGGTGTGTGTGCCAGGTGGGAGATACAGCCATCCACCTTCAGATGTG
TCTACGTGCAGCTCTGCCATTCAACTCGGAACTATAAGTAATTCTCAAGAAAGCCCTCA
TTTTTATAACCTGGCAAAATCTTGTTAATGTCAATTGCTAAAAAATAAATAAAAGCTAGAT
ACTGGGAAACCTAACTGCAAAATGTGNATGTTTTACCCACATTGANTTATTATGCATAAAG

Sequence 5911 found in patent publication WO98/39466
CCCTTTCGAGCGGCCCGCCCGGGCAGGTACGCGGGGATTGTGCTGCGTTTCCGCGGTC
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CTGCTCTGGATCTACAAAAAATTCCTGGAGCCATATATATACCTCTGGTTTCCCCCTTC
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Sequence 5912 found in patent publication WO99/64594
CGCCAGTGTGATGGGATATCTGCAGAATTCGCCCTTTCGAGCGGCCCGCCGGGCAGGTAC
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Sequence 5913 found in patent publication WO99/64594
GATATCTGCAGAATTCGCCCTTAGCGTGGTCGCGGCCGAGGTACT

Sequence 5914 found in patent publication WO99/63088
CCCTTAGCGTGGTCGCGGCCGANGTACGTGCTGCATGTTACNAGCACCTGTCAAAGCCN
AAAGTCAACATGGGTCTGCANAGTAATAATAATGGCACCTGNGTGACCAATCTGACATGC
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Sequence 5915 found in patent publication WO99/64594
CTCGAGCCGGCCGCCAGTGTGATGGGATATCTGCAGAATTCGCCCTTTCGAGCGGCCCGCC
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Sequence 5916 found in patent publication WO99/64594
CCCTTAGCGTGGTCGCGGCCGAGGACTTGAGTTCATGGGCATCTCTCCCGCCGCTCTCA
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Sequence 5917 found in patent publication WO99/64594
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Table 9

Sequence 5918 found in patent publication W099/63088
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 ACAAACAAATG

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Sequence 5919	T84060	Sequence 5964	AA470051
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Sequence 5922	AI207474	Sequence 5967	AA428329
Sequence 5923	AA586744	Sequence 5968	AA531506
Sequence 5924	AA341924	Sequence 5969	AA330038
Sequence 5925	AI188787	Sequence 5970	AA781261
Sequence 5926	AA649215	Sequence 5971	AA056199
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Sequence 5929	AA165093	Sequence 5974	AA416755
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Sequence 5939	AA421682	Sequence 5984	AA506621
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Sequence 5943	AA423926	Sequence 5988	AL040354
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Sequence 5948	AI581291	Sequence 5993	AA595157
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Sequence 5950	AI798949	Sequence 5995	AW020774
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Sequence 5961	AW131601	Sequence 6006	AI613095
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Table 9

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Sequence 6009	AI174739	Sequence 6060	AA464338
Sequence 6010	AA081105	Sequence 6061	AI913975
Sequence 6011	AA307460	Sequence 6062	AI089452
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Sequence 6017	AI205314	Sequence 6068	AA532659
Sequence 6018	AI821897	Sequence 6069	AA569301
Sequence 6019	AA378934	Sequence 6070	AI625693
Sequence 6020	AA577045	Sequence 6071	AA446505
Sequence 6021	AA046763	Sequence 6072	AI139773
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Sequence 6023	R15942	Sequence 6074	AA259220
Sequence 6024	R14299	Sequence 6075	AI189784
Sequence 6025	AA084749	Sequence 6076	AA766393
Sequence 6026	AI191789	Sequence 6077	AA280671
Sequence 6027	AA248791	Sequence 6078	AA099976
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Sequence 6029	AI344785	Sequence 6080	AA130428
Sequence 6030	AA224157	Sequence 6081	AA090298
Sequence 6031	AL037456	Sequence 6082	AA625563
Sequence 6032	AA220989	Sequence 6083	AA868829
Sequence 6033	AA436394	Sequence 6084	AI754313
Sequence 6034	R71944	Sequence 6085	AA281008
Sequence 6035	AI951970	Sequence 6086	AA412359
Sequence 6036	AI468835	Sequence 6087	AI064691
Sequence 6037	AA058683	Sequence 6088	AI183621
Sequence 6038	AA397951	Sequence 6089	N78486
Sequence 6039	T53940	Sequence 6090	AA308274
Sequence 6040	AI675602	Sequence 6091	AA080991
Sequence 6041	AW014151	Sequence 6092	AI267162
Sequence 6042	AA334416	Sequence 6093	AA180911
Sequence 6043	AI659178	Sequence 6094	AA397448
Sequence 6044	AA131342	Sequence 6095	AI267691
Sequence 6045	AA025432	Sequence 6096	AA190350
Sequence 6046	AA641100	Sequence 6097	AA896959
Sequence 6047	AA426362	Sequence 6098	AL036073
Sequence 6048	AW020583	Sequence 6099	AA447158
Sequence 6049	AA783035	Sequence 6100	H44974
Sequence 6050	N29000	Sequence 6101	AI417573
Sequence 6051	AI041616	Sequence 6102	AA045333
Sequence 6052	AA069929	Sequence 6103	AI149642
Sequence 6053	AI655603	Sequence 6104	AA319765
Sequence 6054	AA025570	Sequence 6105	AI445052
Sequence 6055	AI271740	Sequence 6106	AI668594
Sequence 6056	H42090	Sequence 6107	AA654178
Sequence 6057	AA976281	Sequence 6108	AA707850
Sequence 6058	AA554235	Sequence 6109	AI743621

Table 9

Sequence 6110	AI365025	Sequence 6161	N77342
Sequence 6111	AI828618	Sequence 6162	AA322984
Sequence 6112	H54891	Sequence 6163	AW138121
Sequence 6113	AA328068	Sequence 6164	AI423022
Sequence 6114	AA384159	Sequence 6165	AA366354
Sequence 6115	W92536	Sequence 6166	AI246699
Sequence 6116	AA083922	Sequence 6167	AW169648
Sequence 6117	AA467734	Sequence 6168	AW151932
Sequence 6118	AI039955	Sequence 6169	AA621523
Sequence 6119	AA218739	Sequence 6170	D60771
Sequence 6120	AA173882	Sequence 6171	AI991695
Sequence 6121	R99043	Sequence 6172	AA323143
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Sequence 6123	AI439089	Sequence 6174	AW183148
Sequence 6124	AA369710	Sequence 6175	AA460775
Sequence 6125	AA708693	Sequence 6176	AA191422
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Sequence 6127	AI291043	Sequence 6178	AW191003
Sequence 6128	AA146589	Sequence 6179	H49166
Sequence 6129	AA088528	Sequence 6180	AI186460
Sequence 6130	AA404232	Sequence 6181	AL041521
Sequence 6131	AL036335	Sequence 6182	AA393368
Sequence 6132	AI675424	Sequence 6183	AA171510
Sequence 6133	AA293475	Sequence 6184	AA907297
Sequence 6134	AA515904	Sequence 6185	AI554405
Sequence 6135	AI216988	Sequence 6186	AA195092
Sequence 6136	AI375141	Sequence 6187	AA297404
Sequence 6137	AA862612	Sequence 6188	AA146983
Sequence 6138	N36740	Sequence 6189	AA428544
Sequence 6139	AA627351	Sequence 6190	AI767591
Sequence 6140	AA873013	Sequence 6191	AI188389
Sequence 6141	AA857001	Sequence 6192	AI344053
Sequence 6142	H28829	Sequence 6193	AA526368
Sequence 6143	AI660377	Sequence 6194	AA336503
Sequence 6144	AI017417	Sequence 6195	AA618171
Sequence 6145	AA612864	Sequence 6196	AW020650
Sequence 6146	AI446086	Sequence 6197	AA083178
Sequence 6147	AA368546	Sequence 6198	AA513314
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Sequence 6149	AI679040	Sequence 6200	AA305436
Sequence 6150	AA324597	Sequence 6201	AI216986
Sequence 6151	AA291210	Sequence 6202	AA937201
Sequence 6152	AA844907	Sequence 6203	AA909153
Sequence 6153	AA308062	Sequence 6204	AI686325
Sequence 6154	AI78725	Sequence 6205	N62059
Sequence 6155	AI217019	Sequence 6206	AL044298
Sequence 6156	AA101789	Sequence 6207	AI684039
Sequence 6157	AA503551	Sequence 6208	AA694514
Sequence 6158	AA568815	Sequence 6209	AA447167
Sequence 6159	AW162392	Sequence 6210	AA165082
Sequence 6160	AI096676	Sequence 6211	AA078591

Table 9

Sequence 6212	AA216192	Sequence 6263	AA307271
Sequence 6213	AA757613	Sequence 6264	AA100423
Sequence 6214	AA346200	Sequence 6265	AI820966
Sequence 6215	AA131480	Sequence 6266	AW005386
Sequence 6216	AA693936	Sequence 6267	AA313020
Sequence 6217	AI638778	Sequence 6268	AI633775
Sequence 6218	AA251297	Sequence 6269	AI167329
Sequence 6219	AA971638	Sequence 6270	AA422060
Sequence 6220	H00754	Sequence 6271	AI750643
Sequence 6221	AA164586	Sequence 6272	AI768507
Sequence 6222	AA362701	Sequence 6273	AI719488
Sequence 6223	AI654044	Sequence 6274	AI453405
Sequence 6224	AA146701	Sequence 6275	AI267285
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Sequence 6226	AA032025	Sequence 6277	AA574455
Sequence 6227	AA071045	Sequence 6278	AI634404
Sequence 6228	AI922832	Sequence 6279	AA286975
Sequence 6229	AA344430	Sequence 6280	AA199881
Sequence 6230	AI476250	Sequence 6281	AA372230
Sequence 6231	AI971801	Sequence 6282	AA186958
Sequence 6232	AA453217	Sequence 6283	AA491810
Sequence 6233	AI127013	Sequence 6284	AI358777
Sequence 6234	AA507595	Sequence 6285	AA121923
Sequence 6235	AI091341	Sequence 6286	AA464451
Sequence 6236	AA113788	Sequence 6287	AI267634
Sequence 6237	AA226259	Sequence 6288	AI267669
Sequence 6238	AI879992	Sequence 6289	U21128
Sequence 6239	AA083219	Sequence 6290	AF020202
Sequence 6240	AA628794	Sequence 6291	M12530
Sequence 6241	AA228912	Sequence 6292	S73145
Sequence 6242	AA531437	Sequence 6293	AL117237
Sequence 6243	AI188407	Sequence 6294	J04208
Sequence 6244	AA465600	Sequence 6295	AF006085
Sequence 6245	AA961699	Sequence 6296	U77396
Sequence 6246	AA811149	Sequence 6297	AF144235
Sequence 6247	N78154	Sequence 6298	U41060
Sequence 6248	AA593864	Sequence 6299	AL080106
Sequence 6249	W25547	Sequence 6300	M23204
Sequence 6250	AA120782	Sequence 6301	J03799
Sequence 6251	AA131155	Sequence 6302	U60337
Sequence 6252	AA622517	Sequence 6303	AF091076
Sequence 6253	AA156211	Sequence 6304	X07876
Sequence 6254	R12016	Sequence 6305	X07523
Sequence 6255	AI422367	Sequence 6306	X57817
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Sequence 6257	AA827412	Sequence 6308	AB018277
Sequence 6258	N57261	Sequence 6309	AB002370
Sequence 6259	AA888053	Sequence 6310	AB014540
Sequence 6260	AI831866	Sequence 6311	U00238
Sequence 6261	AI655499	Sequence 6312	AL050187
Sequence 6262	AI015770	Sequence 6313	D16562

Table 9

Sequence 6557 found in patent publication WO99/64594
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 CGCCACCACACCCGGCTAATTTTTTGTATTNTTAGTAGAGACGGGGTTTCACCGNGTTAG
 CCAGGATGGTCTTGATCTCCTGACCTCATGGTCCGCCTGCTTTGGCCTCCCAAAGTGCTG
 GGATTACAGNGCGTGAGTCAACCGCGCCCGGCTCATTTAAAAATTTNTGGAGATCAAGTG
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Sequence #	Accession#	Sequence 6599	AB018353
Sequence 6558	AA316721	Sequence 6600	AB019568
Sequence 6559	AA469320	Sequence 6601	AB020669
Sequence 6560	AB018353	Sequence 6602	AF011387
Sequence 6561	AB019568	Sequence 6603	AF035286
Sequence 6562	AB020669	Sequence 6604	AF070556
Sequence 6563	AF011387	Sequence 6605	AF077207
Sequence 6564	AF035286	Sequence 6606	AF083441
Sequence 6565	AF070556	Sequence 6607	AF176006
Sequence 6566	AF077207	Sequence 6608	D13315
Sequence 6567	AF083441	Sequence 6609	D13748
Sequence 6568	AF176006	Sequence 6610	D21163
Sequence 6569	D13315	Sequence 6611	D29011
Sequence 6570	D13748	Sequence 6612	D45887
Sequence 6571	D21163	Sequence 6613	D66904
Sequence 6572	D29011	Sequence 6614	E02628
Sequence 6573	D45887	Sequence 6615	E06721
Sequence 6574	D66904	Sequence 6616	J02908
Sequence 6575	E02628	Sequence 6617	J03007
Sequence 6576	E06721	Sequence 6618	J03578
Sequence 6577	J02908	Sequence 6619	L38995
Sequence 6578	J03007	Sequence 6620	M10036
Sequence 6579	J03578	Sequence 6621	M16247
Sequence 6580	L38995	Sequence 6622	M16660
Sequence 6581	M10036	Sequence 6623	M17885
Sequence 6582	M16247	Sequence 6624	M28373
Sequence 6583	M16660	Sequence 6625	M33308
Sequence 6584	M17885	Sequence 6626	M36647
Sequence 6585	M28373	Sequence 6627	M60854
Sequence 6586	M33308	Sequence 6628	M64098
Sequence 6587	M36647	Sequence 6629	M81601
Sequence 6588	M60854	Sequence 6630	U12465
Sequence 6589	M64098	Sequence 6631	U14969
Sequence 6590	M81601	Sequence 6632	U14972
Sequence 6591	U12465	Sequence 6633	U34252
Sequence 6592	U14969	Sequence 6634	U83110
Sequence 6593	U14972	Sequence 6635	X04098
Sequence 6594	U34252	Sequence 6636	AL035985
Sequence 6595	U83110	Sequence 6637	T68393
Sequence 6596	X04098	Sequence 6638	AA972137
Sequence 6597	AA316721	Sequence 6639	AI635070
Sequence 6598	AA469320	Sequence 6640	AA333907

Table 9

Sequence 6641	AA507383	Sequence 6692	AA317445
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Sequence 6652	W52418	Sequence 6703	AA604815
Sequence 6653	AI267185	Sequence 6704	AA378776
Sequence 6654	AA317855	Sequence 6705	AA127254
Sequence 6655	AA194517	Sequence 6706	AI469093
Sequence 6656	AA312528	Sequence 6707	AI859619
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Sequence 6659	AA159198	Sequence 6710	AI832408
Sequence 6660	AI092436	Sequence 6711	AA099631
Sequence 6661	AW135302	Sequence 6712	AA091988
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Sequence 6670	AA044187	Sequence 6721	AI088651
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Sequence 6672	AA225857	Sequence 6723	AA557191
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Sequence 6674	AL042316	Sequence 6725	AW140078
Sequence 6675	AA864259	Sequence 6726	AA249195
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Sequence 6685	AA468335	Sequence 6736	AA046538
Sequence 6686	AA381278	Sequence 6737	AA300575
Sequence 6687	AA503355	Sequence 6738	AI065099
Sequence 6688	AA054012	Sequence 6739	AI688488
Sequence 6689	AI815380	Sequence 6740	AA883580
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Sequence 6691	AA577045	Sequence 6742	AA307728

Table 9

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Sequence 6754	AA357592	Sequence 6805	E02904
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Sequence 6767	AA101964	Sequence 6818	AF000982
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Sequence 6773	AA232186	Sequence 6824	L25085
Sequence 6774	AA654557	Sequence 6825	AF000992
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Sequence 6776	AA308370	Sequence 6827	S70290
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Sequence 6895	AF047472	Sequence 6946	AF147331

Table 9

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Sequence 6968	U19718	Sequence 7001	E06721
Sequence 6969	AB018348	Sequence 7002	S95936
Sequence 6970	AF027158	Sequence 7003	D00017
Sequence 6971	L38562	Sequence 7004	V68992
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Sequence 7015	AI086486	Sequence 7029	AA229529
Sequence 7016	AI086220	Sequence 7030	AA507383
Sequence 7017	AA136781	Sequence 7031	AA091988
Sequence 7018	W28226	Sequence 7032	AA411564
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Sequence 7020	AA101964	Sequence 7034	AA640687
Sequence 7021	AA300575	Sequence 7035	T57733
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Sequence 7023	AW135302	Sequence 7037	AA054012
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Table 9

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Sequence 7076	AA148087	Sequence 7127	AI267502
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Sequence 7408	AA092060	Sequence 7433	AA081068
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Sequence 7411	AA295348	Sequence 7436	AA366518

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Sequence 7543	U15008	Sequence 7582	X57812
Sequence 7544	AF044956	Sequence 7583	AF039918
Sequence 7545	X16940	Sequence 7584	AF138300
Sequence 7546	M33318	Sequence 7585	J00231
Sequence 7547	M16247	Sequence 7586	AL117413
Sequence 7548	J02642	Sequence 7587	M97922
Sequence 7549	D50372	Sequence 7588	M31627
Sequence 7550	M17886	Sequence 7589	AL122091
Sequence 7551	M14631	Sequence 7590	M63573
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Sequence 7553	Y14737	Sequence 7592	E01593
Sequence 7554	M26880	Sequence 7593	D16947
Sequence 7555	J03015	Sequence 7594	D90373
Sequence 7556	M81757	Sequence 7595	X13238
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Sequence 7558	X62125	Sequence 7597	AB015856
Sequence 7559	AF095448	Sequence 7598	AF153608
Sequence 7560	AF085360	Sequence 7599	Y14738
Sequence 7561	S81439	Sequence 7600	D43950
Sequence 7562	X57809	Sequence 7601	X81109
Sequence 7563	L25085	Sequence 7602	AB018290
Sequence 7564	AF131856	Sequence 7603	M24194
Sequence 7565	L03426	Sequence 7604	L40410
Sequence 7566	D87735	Sequence 7605	AF103774
Sequence 7567	X54304	Sequence 7606	X82321
Sequence 7568	A28074	Sequence 7607	M12938
Sequence 7569	S54005	Sequence 7608	T47520
Sequence 7570	D14710	Sequence 7609	V34180
Sequence 7571	AF054187	Sequence 7610	Z17200
Sequence 7572	X56932	Sequence 7611	X84207
Sequence 7573	M17885	Sequence 7612	Z42940
Sequence 7574	AF026381	Sequence 7613	Q44223
Sequence 7575	X63432	Sequence 7614	V89565
Sequence 7576	X57819	Sequence 7615	V86389
Sequence 7577	M31212	Sequence 7616	V44301

Sequence 7617 found in patent publication WO99/63088
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Table 9

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Sequence 7622	AA469453	Sequence 7671	AI267282
Sequence 7623	AA294986	Sequence 7672	AA452012
Sequence 7624	AI061603	Sequence 7673	D16111
Sequence 7625	AA296846	Sequence 7674	AF077201
Sequence 7626	AI815972	Sequence 7675	AF070561
Sequence 7627	AA232695	Sequence 7676	E08293
Sequence 7628	AA937773	Sequence 7677	X15729
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Sequence 7630	AA053860	Sequence 7679	J03007
Sequence 7631	AA971857	Sequence 7680	M81757
Sequence 7632	AA641867	Sequence 7681	J03040
Sequence 7633	AA046538	Sequence 7682	X56932
Sequence 7634	AI652066	Sequence 7683	X13923
Sequence 7635	AA419227	Sequence 7684	M14631
Sequence 7636	AL037114	Sequence 7685	AB028624
Sequence 7637	AA486674	Sequence 7686	X54304
Sequence 7638	AA037181	Sequence 7687	X99920
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Sequence 7640	AI540174	Sequence 7689	AB004304
Sequence 7641	AA307728	Sequence 7690	AF196482
Sequence 7642	AA314920	Sequence 7691	AB018290
Sequence 7643	AA366518	Sequence 7692	M29366
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Sequence 7656	W76278	Sequence 7705	X57819
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Sequence 7659	AI812063	Sequence 7708	AJ224866
Sequence 7660	AA081068	Sequence 7709	J00194
Sequence 7661	AA099933	Sequence 7710	AB011079
Sequence 7662	AA654557	Sequence 7711	U94592
Sequence 7663	AI927004	Sequence 7712	U14970
Sequence 7664	AA488820	Sequence 7713	D14710
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Table 9

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Sequence 7721	L25085	Sequence 7772	J04164
Sequence 7722	M12938	Sequence 7773	AF153608
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Sequence 7726	AF085807	Sequence 7777	X52520
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Sequence 7737	J02642	Sequence 7788	M16247
Sequence 7738	AF077202	Sequence 7789	M25113
Sequence 7739	AF190168	Sequence 7790	D87292
Sequence 7740	X81109	Sequence 7791	M31627
Sequence 7741	AF100756	Sequence 7792	AL117666
Sequence 7742	M63573	Sequence 7793	L03426
Sequence 7743	X04106	Sequence 7794	D87666
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Sequence 7745	Z47087	Sequence 7796	X16940
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Sequence 7760	U14966	Sequence 7811	AF168956
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Sequence 7764	M26880	Sequence 7815	X12791
Sequence 7765	AF085360	Sequence 7816	M26325
Sequence 7766	AB022653	Sequence 7817	X02530
Sequence 7767	S54005	Sequence 7818	X14583

Table 9

Sequence 7819	D43950	Sequence 7833	M87790
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Sequence 7823	L20941	Sequence 7837	AJ223353
Sequence 7824	D16947	Sequence 7838	Q44223
Sequence 7825	X13238	Sequence 7839	Z42940
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Sequence 7827	AF151905	Sequence 7841	V44301
Sequence 7828	D88674	Sequence 7842	Z17200
Sequence 7829	E01593	Sequence 7843	V86389
Sequence 7830	E00096	Sequence 7844	V89565
Sequence 7831	AF151902	Sequence 7845	X84207
Sequence 7832	L31581	Sequence 7846	V34180

Sequence 7847 found in patent publication WO99/63088

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Sequence #	Accession #	Sequence 7872	X74801
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Sequence 7854	AI267492	Sequence 7879	U14971
Sequence 7855	AI267216	Sequence 7880	M10905
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Table 9

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Sequence 7909	AF017688	Sequence 7960	AI907528
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Sequence 7912	AI267282	Sequence 7963	AI905418
Sequence 7913	AI216969	Sequence 7964	AL135007
Sequence 7914	AI267454	Sequence 7965	AI907037
Sequence 7915	AI267492	Sequence 7966	AI907067
Sequence 7916	AI253335	Sequence 7967	AW238869
Sequence 7917	AA249154	Sequence 7968	AW239219
Sequence 7918	AA342969	Sequence 7969	AW238912
Sequence 7919	AA604610	Sequence 7970	AW245906
Sequence 7920	AI500553	Sequence 7971	AW385350
Sequence 7921	F25339	Sequence 7972	AA316962
Sequence 7922	AF052097	Sequence 7973	AA493558
Sequence 7923	AB002387	Sequence 7974	AA837031
Sequence 7924	AF125525	Sequence 7975	AW361434
Sequence 7925	D87666	Sequence 7976	AJ387747
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Sequence 7927	M87790	Sequence 7978	AC010197
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Sequence 7930	D17039	Sequence 7981	M14144
Sequence 7931	Y15286	Sequence 7982	AC000024
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Sequence 7946	E02904	Sequence 7997	X98507
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Table 9

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Sequence 8004	AA918145	Sequence 8055	AW246427
Sequence 8005	AA330276	Sequence 8056	AL134929
Sequence 8006	AA897614	Sequence 8057	AA454884
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Sequence 8017	AA772683	Sequence 8068	AW192482
Sequence 8018	AW369331	Sequence 8069	AA130162
Sequence 8019	T07858	Sequence 8070	AA512946
Sequence 8020	AA353742	Sequence 8071	AA128348
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Sequence 8023	AW578701	Sequence 8074	AI032559
Sequence 8024	AA524812	Sequence 8075	AI093553
Sequence 8025	AA301143	Sequence 8076	AA996322
Sequence 8026	AA206373	Sequence 8077	AI684596
Sequence 8027	AA147938	Sequence 8078	N39760
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Sequence 8034	AA308809	Sequence 8085	AB000095
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Sequence 8038	AI207795	Sequence 8089	AK001636
Sequence 8039	AA082795	Sequence 8090	L42373
Sequence 8040	AI907176	Sequence 8091	AF029786
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Sequence 8043	AA219739	Sequence 8094	D87450
Sequence 8044	AA654557	Sequence 8095	AF041259
Sequence 8045	AA305117	Sequence 8096	X16396
Sequence 8046	AA324822	Sequence 8097	AC006064
Sequence 8047	AA129991	Sequence 8098	AF110774
Sequence 8048	AA190334	Sequence 8099	X62534
Sequence 8049	T27151	Sequence 8100	D25542

Table 9

Sequence 8101	AL096719	Sequence 8152	AL117412
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Sequence 8106	D29640	Sequence 8157	X04588
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Sequence 8109	L76416	Sequence 8160	D14697
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Sequence 8111	AC008981	Sequence 8162	AB003730
Sequence 8112	AF113015	Sequence 8163	AC004230
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Sequence 8115	AC007563	Sequence 8166	M33197
Sequence 8116	AK000474	Sequence 8167	AF042284
Sequence 8117	AF113016	Sequence 8168	AL136543
Sequence 8118	AC002480	Sequence 8169	U50079
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Sequence 8148	AF005889	Sequence 8199	AJ251053
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Sequence 8150	M24842	Sequence 8201	AK000639
Sequence 8151	E14562	Sequence 8202	AC008040

Table 9

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Sequence 8232	AL021807	Sequence 8283	E13878
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Sequence 8243	AA055043	Sequence 8294	AL034379
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Sequence 8253	AW238267	Sequence 8304	AL136773

Table 9

Sequence 8305	AF167706	Sequence 8356	A21577
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Sequence 8313	AF113699	Sequence 8364	AL137517
Sequence 8314	AC009311	Sequence 8365	AF183810
Sequence 8315	AK000953	Sequence 8366	A31584
Sequence 8316	AC007748	Sequence 8367	AC004186
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Sequence 8318	AW404697	Sequence 8369	AF159447
Sequence 8319	AI906045	Sequence 8370	AL035461
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Sequence 8345	AW380355	Sequence 8396	AW380184
Sequence 8346	AI904278	Sequence 8397	AW440150
Sequence 8347	AF161380	Sequence 8398	AW404368
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Sequence 8349	L77702	Sequence 8400	AW407841
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Sequence 8352	AK000162	Sequence 8403	AF179404
Sequence 8353	AL021154	Sequence 8404	AL133610
Sequence 8354	J03474	Sequence 8405	AC006530
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Table 9

Sequence 8407	AC007055	Sequence 8459	AA029668
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Sequence 8410	AF161484	Sequence 8462	AA304979
Sequence 8411	D87017	Sequence 8463	AW067793
Sequence 8412	AF151018	Sequence 8464	AL134591
Sequence 8413	AK000349	Sequence 8465	AA355601
Sequence 8414	AK001732	Sequence 8466	AI133305
Sequence 8415	AK000624	Sequence 8467	R91904
Sequence 8416	AF113014	Sequence 8468	AL047780
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Sequence 8418	AC005839	Sequence 8470	AA442553
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Sequence 8448	AA312550	Sequence 8500	AA337350
Sequence 8449	R64693	Sequence 8501	AA255648
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Sequence 8451	AA291844	Sequence 8503	AW405603
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Sequence 8456	AI445025	Sequence 8508	AA121996
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Sequence 8458	AA780407	Sequence 8510	AA493120

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Sequence 8515	AI081804	Sequence 8567	AI089653
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Sequence 8518	AA327250	Sequence 8570	AA962194
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Sequence 8526	AW368722	Sequence 8578	AA639822
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Sequence 8529	AA359526	Sequence 8581	AW410945
Sequence 8530	AW183621	Sequence 8582	AA134527
Sequence 8531	AI023341	Sequence 8583	AA074869
Sequence 8532	N78296	Sequence 8584	AI554887
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Sequence 8534	AI028023	Sequence 8586	AI679939
Sequence 8535	AA419576	Sequence 8587	AA307033
Sequence 8536	AI763286	Sequence 8588	AI619777
Sequence 8537	AA804597	Sequence 8589	AA292139
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Sequence 8541	AW402926	Sequence 8593	AW402294
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Sequence 8558	AA354214	Sequence 8610	AA994027
Sequence 8559	AA293127	Sequence 8611	AI878887
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Sequence 8562	AA076628	Sequence 8614	AW439210

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Table 9

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Table 9

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Sequence 8845 found in patent publication WO99/64594

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Sequence 8846 found in patent publication WO99/20654

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Sequence 8913	AW265262	Sequence 8964	AA481643
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Sequence 8954	AA280261	Sequence 9005	A26126
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Table 9

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Sequence 9051	AF017732	Sequence 9102	AF161458
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Sequence 9058	AC005249	Sequence 9109	AK000078
Sequence 9059	AF201949	Sequence 9110	AC003081
Sequence 9060	X73459	Sequence 9111	X72420
Sequence 9061	AC005480	Sequence 9112	AK001360
Sequence 9062	AC005531	Sequence 9113	AL137256
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Table 9

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Sequence 9185 found in patent publication WO00/04140

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Table 9

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Sequence 9246	AF090928	Sequence 9298	M12523
Sequence 9247	AC012331	Sequence 9299	AF116194
Sequence 9248	AF092907	Sequence 9300	AF203815
Sequence 9249	AC002528	Sequence 9301	E01094
Sequence 9250	AL021940	Sequence 9302	AC006165
Sequence 9251	Z62968	Sequence 9303	AF015812
Sequence 9252	AL049610	Sequence 9304	AF077345
Sequence 9253	D87022	Sequence 9305	AC020663
Sequence 9254	AL031670	Sequence 9306	X52519
Sequence 9255	AL096710	Sequence 9307	AC005480

Table 9

Sequence 9308	AK001149	Sequence 9325	AA532659
Sequence 9309	U47924	Sequence 9326	AA113788
Sequence 9310	AC006449	Sequence 9327	AF100756
Sequence 9311	AF116195	Sequence 9328	AC004686
Sequence 9312	U91328	Sequence 9329	AL137535
Sequence 9313	AL050331	Sequence 9330	AC005515
Sequence 9314	A63633	Sequence 9331	AI312325
Sequence 9315	AF090928	Sequence 9332	AW367627
Sequence 9316	AI089452	Sequence 9333	AI610402
Sequence 9317	AA568815	Sequence 9334	AW378557
Sequence 9318	AI610402	Sequence 9335	AI267502
Sequence 9319	AI267285	Sequence 9336	AI253379
Sequence 9320	AA416755	Sequence 9337	AF100756
Sequence 9321	AI267162	Sequence 9338	AL137535
Sequence 9322	AW367627	Sequence 9339	AC004686
Sequence 9323	AW405216	Sequence 9340	AF178030
Sequence 9324	AW378557		

Table 9-1
(A key to markers in Table 9)

Sequence Numbers	Database
1-687	dbEST
688-1002	Genbank
1003-1014	NUCPATENT
1020-1475	dbEST
1476-1817	Genbank
1818-1834	NUCPATENT
1837-2535	dbEST
2536-2977	Genbank
2978-3010	NUCPATENT
3024-3266	dbEST
3267-3395	Genbank
3396-3401	NUCPATENT
3404-3969	dbEST
3970-4320	Genbank
4321-4362	NUCPATENT
4369-4836	dbEST
4837-5275	Genbank
5276-5299	NUCPATENT
5301-5651	dbEST
5652-5883	Genbank
5884-5905	NUCPATENT
5919-6288	dbEST
6289-6533	Genbank
6534-6550	NUCPATENT
6558-6559	dbEST
6560-6596	Genbank
6597-6598	dbEST
6599-6635	Genbank
6636-6782	dbEST
6783-7003	Genbank
7004-7010	NUCPATENT
7012-7158	dbEST
7159-7379	Genbank
7380-7386	NUCPATENT
7388-7442	dbEST
7443-7607	Genbank
7608-7616	NUCPATENT
7618-7672	dbEST
7673-7837	Genbank
7838-7846	NUCPATENT
7848-7866	dbEST
7867-7900	Genbank
7901-7902	NUCPATENT
7903-7921	dbEST
7922-7955	Genbank
7956-7957	NUCPATENT

Table 9-1
(A key to markers in Table 9)

7958-7975	dbEST
7976-7999	Genbank
8000-8084	dbEST
8085-8238	Genbank
8239-8241	NUCPATENT
8242-8275	dbEST
8276-8316	Genbank
8317	NUCPATENT
8318-8324	dbEST
8325-8329	Genbank
8330-8346	dbEST
8347-8382	Genbank
8383-8401	dbEST
8402-8430	Genbank
8431-8798	dbEST
8799-8840	Genbank
8841-8844	NUCPATENT
8847-8985	dbEST
8986-9180	Genbank
9181-9184	NUCPATENT
9186-9187	Genbank
9188-9200	Genbank
9201-9210	dbEST
9211-9237	Genbank
9238-9244	dbEST
9245-9262	Genbank
9263-9267	dbEST
9268-9289	Genbank
9290-9296	dbEST
9297-9315	Genbank
9316-9326	dbEST
9327-9330	Genbank
9331-9336	dbEST
9337-9340	Genbank

Table 10

Clone	% Tumors	UP/DOWN	Max Fold	# Tumors	Fold	Max # Tumors
21899	33.33333333	DOWN	2	2	2	2
21941	16.66666667	UP	5	1	2	2
22040	16.66666667	UP	3	1	3	1
22134	16.66666667	UP	5	1	5	1
22355	33.33333333	DOWN	3	2	2	3
22895	33.33333333	DOWN	5	2	2	5
23041	50	DOWN	2	3	2	3
23443	33.33333333	DOWN	3	2	2	3
23454	16.66666667	UP	10	1	5	2
23790	50	DOWN	2	3	2	3
24097	33.33333333	UP	2	2	2	2
24339	33.33333333	UP	2	2	2	2
24642	33.33333333	DOWN	2	2	2	2
24884	16.66666667	UP	3	1	2	2
24895	16.66666667	DOWN	3	1	3	1
25194	33.33333333	DOWN	2	2	2	2
25389	33.33333333	DOWN	2	2	2	2
25396	16.66666667	UP	3	1	3	1
25517	16.66666667	DOWN	3	1	2	2
25520	33.33333333	UP	2	2	2	2
26162	50	DOWN	2	3	2	3
26295	16.66666667	UP	3	1	2	2
26568	16.66666667	DOWN	5	1	3	4
27333	16.66666667	UP	3	1	3	1
27388	16.66666667	UP	3	1	2	2
27404	16.66666667	UP	3	1	3	1
27544	16.66666667	UP	3	1	2	2
27769	16.66666667	DOWN	3	1	3	1
28823	16.66666667	UP	3	1	3	1
29030	33.33333333	DOWN	2	2	2	2
29063	16.66666667	DOWN	3	1	2	3
29349	50	UP	2	3	2	3
29920	33.33333333	DOWN	2	2	2	2
29927	16.66666667	UP	3	1	3	1
29967	33.33333333	DOWN	3	2	3	2
30428	16.66666667	UP	3	1	2	2
30473	16.66666667	DOWN	3	1	3	1
30793	16.66666667	DOWN	3	1	2	2
31251	33.33333333	DOWN	2	2	2	2
31869	33.33333333	UP	2	2	2	2
31955	16.66666667	DOWN	3	1	3	1
32092	16.66666667	UP	3	1	3	1
32205	33.33333333	DOWN	2	2	2	2
32273	16.66666667	DOWN	3	1	3	1
32331	16.66666667	UP	3	1	2	2
32381	50	DOWN	2	3	2	3
32509	33.33333333	DOWN	2	2	2	2
32516	16.66666667	UP	5	1	5	1

Table 10

32522	33.33333333	DOWN	2	2	2	2
32567	16.66666667	DOWN	3	1	2	3
32661	16.66666667	UP	3	1	3	1
32708	50	DOWN	2	3	2	3
32777	16.66666667	DOWN	3	1	2	2
32962	33.33333333	DOWN	2	2	2	2
33022	33.33333333	UP	2	2	2	2
33045	16.66666667	UP	5	1	5	1
33076	16.66666667	UP	3	1	2	2
33096	16.66666667	UP	5	1	5	1
33294	16.66666667	DOWN	3	1	2	2
33523	33.33333333	UP	2	2	2	2
33643	33.33333333	UP	3	2	3	2
33821	16.66666667	DOWN	10	1	2	3
33837	16.66666667	DOWN	3	1	3	1
34106	16.66666667	UP	3	1	2	2
34302	16.66666667	DOWN	3	1	3	1
34326	50	UP	2	3	2	3
34442	16.66666667	UP	3	1	2	2
34526	16.66666667	UP	3	1	2	3
34832	16.66666667	UP	5	1	5	1
35010	16.66666667	UP	5	1	3	2
35058	16.66666667	UP	3	1	2	2
35311	50	DOWN	2	3	2	3
35329	50	DOWN	3	3	2	4
35481	16.66666667	UP	3	1	2	2
35484	16.66666667	UP	3	1	2	2
35575	16.66666667	DOWN	10	1	2	3
35626	16.66666667	DOWN	10	1	2	3
35804	16.66666667	DOWN	3	1	2	2
35828	16.66666667	UP	3	1	3	1
36393	16.66666667	UP	3	1	3	1
37404	66.66666667	DOWN	2	4	2	4
37665	16.66666667	DOWN	3	1	2	4
37901	16.66666667	UP	5	1	5	1
37980	16.66666667	UP	3	1	3	1
38263	33.33333333	DOWN	2	2	2	2
38510	33.33333333	DOWN	2	2	2	2
38718	33.33333333	DOWN	2	2	2	2
39076	33.33333333	DOWN	2	2	2	2
39313	50	UP	2	3	2	3
39442	16.66666667	UP	3	1	3	1
39453	16.66666667	DOWN	3	1	2	2
39577	16.66666667	DOWN	3	1	3	1
39685	33.33333333	UP	2	2	2	2
39766	16.66666667	DOWN	3	1	2	2
39833	16.66666667	UP	3	1	3	1
39885	50	DOWN	3	3	2	5
39977	16.66666667	UP	3	1	2	2

Table 10

40063	16.66666667	DOWN	3	1	2	2
40104	16.66666667	DOWN	3	1	3	1
40155	16.66666667	DOWN	3	1	2	4
40338	16.66666667	DOWN	3	1	3	1
40364	50	DOWN	3	3	2	5
40402	33.33333333	UP	2	2	2	2
40672	16.66666667	DOWN	3	1	3	1
40762	16.66666667	UP	3	1	3	1
40881	33.33333333	DOWN	2	2	2	2
41108	16.66666667	DOWN	3	1	2	2
41295	16.66666667	DOWN	3	1	2	4
41344	16.66666667	DOWN	3	1	2	2
41391	16.66666667	UP	5	1	2	2
41424	83.33333333	DOWN	3	5	2	6
41569	16.66666667	UP	3	1	2	2
41647	16.66666667	DOWN	3	1	3	1
41822	16.66666667	UP	3	1	2	2
41869	33.33333333	DOWN	2	2	2	2
41888	50	DOWN	3	3	2	6
41905	16.66666667	UP	3	1	3	1
42035	16.66666667	UP	5	1	5	1
42118	66.66666667	DOWN	2	4	2	4
42258	33.33333333	UP	2	2	2	2
42373	16.66666667	UP	5	1	5	1
42415	33.33333333	DOWN	10	2	5	4
42636	16.66666667	DOWN	3	1	2	2
42864	16.66666667	DOWN	3	1	3	1
43662	16.66666667	UP	3	1	2	2
43743	16.66666667	DOWN	3	1	3	1
44387	33.33333333	DOWN	5	2	2	3
45542	16.66666667	DOWN	3	1	2	3
45544	33.33333333	DOWN	2	2	2	2
45578	16.66666667	DOWN	3	1	3	1
45641	16.66666667	UP	3	1	3	1
45852	16.66666667	DOWN	3	1	2	3
46054	33.33333333	DOWN	2	2	2	2
46166	16.66666667	DOWN	3	1	2	3
46266	33.33333333	DOWN	2	2	2	2
46356	16.66666667	UP	10	1	10	1
46452	16.66666667	UP	3	1	3	1
46518	16.66666667	DOWN	3	1	3	1
46667	33.33333333	DOWN	2	2	2	2
46829	16.66666667	DOWN	3	1	2	3
46958	66.66666667	DOWN	2	4	2	4
47037	16.66666667	DOWN	3	1	2	2
47043	16.66666667	UP	3	1	3	1
47264	33.33333333	DOWN	2	2	2	2
47378	16.66666667	UP	10	1	10	1
47452	16.66666667	DOWN	3	1	2	3

Table 10

47459	50	DOWN	5	3	2	4
47461	16.66666667	UP	3	1	3	1
48183	33.33333333	DOWN	5	2	3	5
48553	33.33333333	UP	2	2	2	2
48642	33.33333333	DOWN	2	2	2	2
48751	33.33333333	DOWN	2	2	2	2
49204	16.66666667	UP	5	1	5	1
49229	16.66666667	UP	5	1	5	1
49249	16.66666667	DOWN	3	1	2	4
49311	16.66666667	UP	3	1	3	1
49332	16.66666667	UP	3	1	3	1
49443	16.66666667	UP	3	1	2	2
49504	33.33333333	UP	2	2	2	2
49515	33.33333333	UP	2	2	2	2
49567	16.66666667	DOWN	3	1	2	2
49595	33.33333333	DOWN	2	2	2	2
49707	16.66666667	UP	3	1	2	4
49796	33.33333333	DOWN	10	2	3	4
49836	16.66666667	DOWN	3	1	3	1
49839	16.66666667	UP	3	1	2	2
49987	16.66666667	DOWN	25	1	5	6
50114	66.66666667	DOWN	3	4	3	4
50508	16.66666667	DOWN	3	1	3	1
50521	16.66666667	UP	3	1	3	1
50562	33.33333333	UP	3	2	2	3
50680	33.33333333	UP	2	2	2	2
50703	16.66666667	UP	3	1	3	1
50764	16.66666667	UP	3	1	2	2
50772	16.66666667	UP	3	1	3	1
50786	16.66666667	UP	3	1	3	1
50877	16.66666667	UP	5	1	5	1
50892	16.66666667	DOWN	5	1	3	3
50900	16.66666667	DOWN	5	1	2	4
51103	16.66666667	UP	3	1	2	2
51216	33.33333333	UP	2	2	2	2
51226	16.66666667	UP	3	1	2	5
51331	33.33333333	DOWN	3	2	2	3
51363	16.66666667	DOWN	3	1	3	1
51378	16.66666667	UP	3	1	2	2
51406	16.66666667	UP	3	1	2	2
51420	16.66666667	UP	3	1	3	1
51447	33.33333333	UP	3	2	3	2
51448	16.66666667	DOWN	3	1	3	1
51511	16.66666667	DOWN	3	1	3	1
51585	16.66666667	UP	3	1	2	2
51606	33.33333333	UP	2	2	2	2
51608	16.66666667	DOWN	3	1	2	2
51700	33.33333333	DOWN	2	2	2	2
51708	16.66666667	DOWN	3	1	2	3

Table 10

51716	33.33333333	UP	2	2	2	2
51737	50	DOWN	5	3	2	6
51773	16.66666667	UP	5	1	5	1
51831	16.66666667	DOWN	3	1	2	3
51921	16.66666667	UP	3	1	3	1
51939	16.66666667	DOWN	3	1	3	1
52021	16.66666667	DOWN	5	1	2	3
52026	16.66666667	UP	3	1	3	1
52079	66.66666667	DOWN	3	4	2	5
52096	33.33333333	DOWN	2	2	2	2
52186	16.66666667	DOWN	3	1	3	1
52303	16.66666667	DOWN	3	1	2	3
52339	16.66666667	DOWN	3	1	2	2
52704	100	DOWN	2	6	2	6
52741	33.33333333	UP	2	2	2	2
52754	33.33333333	UP	2	2	2	2
52933	33.33333333	DOWN	5	2	3	3
52990	33.33333333	UP	2	2	2	2
52992	33.33333333	DOWN	2	2	2	2
53081	16.66666667	UP	3	1	2	2
53122	33.33333333	UP	3	2	2	3
53319	66.66666667	DOWN	2	4	2	4
53384	50	DOWN	3	3	2	5
53393	16.66666667	UP	5	1	5	1
60605	16.66666667	DOWN	3	1	3	1
62112	16.66666667	UP	3	1	3	1
62263	16.66666667	DOWN	3	1	3	1
62340	16.66666667	DOWN	3	1	3	1
66317	16.66666667	DOWN	5	1	3	2
66322	16.66666667	UP	3	1	3	1
66437	16.66666667	UP	10	1	2	2
66498	16.66666667	DOWN	3	1	2	2
66560	16.66666667	UP	5	1	5	1
66562	50	DOWN	2	3	2	3
66564	16.66666667	DOWN	3	1	2	2
66594	16.66666667	UP	3	1	3	1
66599	16.66666667	DOWN	25	1	3	2
66815	33.33333333	DOWN	2	2	2	2
66977	33.33333333	DOWN	2	2	2	2
67033	16.66666667	UP	3	1	3	1
67067	33.33333333	DOWN	2	2	2	2
67069	16.66666667	UP	3	1	3	1
67167	16.66666667	DOWN	3	1	3	1
67654	33.33333333	UP	2	2	2	2
68049	16.66666667	DOWN	3	1	2	5
68207	16.66666667	UP	3	1	3	1
68340	16.66666667	UP	3	1	2	2
68557	33.33333333	UP	3	2	3	2
68794	16.66666667	DOWN	5	1	5	1

Table 10

68988	16.66666667	UP	3	1	3	1
69046	33.33333333	UP	2	2	2	2
69904	16.66666667	UP	3	1	3	1
69935	33.33333333	UP	2	2	2	2
70093	16.66666667	DOWN	3	1	3	1
70349	16.66666667	DOWN	3	1	3	1
71727	16.66666667	DOWN	3	1	3	1
71863	16.66666667	UP	3	1	3	1
72778	16.66666667	DOWN	3	1	2	2
73268	33.33333333	DOWN	2	2	2	2
73638	50	DOWN	2	3	2	3
73720	16.66666667	DOWN	3	1	3	1
73786	16.66666667	DOWN	5	1	5	1
73787	16.66666667	DOWN	5	1	3	2
73807	16.66666667	DOWN	5	1	5	1
73960	16.66666667	DOWN	5	1	5	1
74007	16.66666667	DOWN	5	1	5	1
74512	16.66666667	DOWN	5	1	5	1
74518	16.66666667	UP	3	1	3	1
74537	16.66666667	DOWN	3	1	3	1
74738	16.66666667	DOWN	3	1	3	1
75884	16.66666667	UP	3	1	3	1
75919	16.66666667	UP	3	1	3	1
76005	16.66666667	DOWN	5	1	5	1
76098	16.66666667	DOWN	3	1	3	1
76179	16.66666667	DOWN	3	1	3	1
76221	16.66666667	UP	5	1	5	1
76864	16.66666667	DOWN	3	1	3	1
77202	16.66666667	DOWN	5	1	5	1
77244	16.66666667	DOWN	3	1	3	1
77911	16.66666667	DOWN	3	1	2	3
77915	16.66666667	DOWN	3	1	3	1
78041	16.66666667	DOWN	5	1	5	1
78148	16.66666667	UP	3	1	2	3
78353	33.33333333	DOWN	3	2	2	3
78921	16.66666667	DOWN	3	1	3	1
79022	16.66666667	UP	3	1	2	2
79412	33.33333333	DOWN	3	2	2	4
79503	33.33333333	DOWN	3	2	3	2
79581	16.66666667	UP	3	1	3	1
79629	16.66666667	UP	3	1	2	2
79747	16.66666667	DOWN	3	1	3	1
79822	16.66666667	DOWN	3	1	3	1
79852	16.66666667	DOWN	5	1	5	1
79899	33.33333333	DOWN	2	2	2	2
80050	33.33333333	UP	2	2	2	2
80109	33.33333333	UP	5	2	2	4
80221	33.33333333	UP	3	2	3	2
80371	16.66666667	DOWN	3	1	3	1

Table 10

80500	16.66666667	UP	3	1	2	4
80574	16.66666667	DOWN	5	1	5	1
80618	16.66666667	UP	3	1	3	1
80643	16.66666667	UP	3	1	2	3
80672	16.66666667	UP	3	1	3	1
80948	16.66666667	DOWN	5	1	2	4
81203	16.66666667	DOWN	5	1	3	2
81316	16.66666667	UP	3	1	3	1
81320	16.66666667	UP	3	1	2	2
81427	16.66666667	DOWN	5	1	5	1
81604	16.66666667	DOWN	3	1	3	1
82225	33.33333333	DOWN	3	2	2	5
82236	33.33333333	DOWN	2	2	2	2
82556	16.66666667	UP	3	1	3	1
82869	33.33333333	DOWN	3	2	2	3
83029	16.66666667	DOWN	3	1	3	1
83466	16.66666667	DOWN	3	1	3	1
84211	33.33333333	UP	2	2	2	2
84586	16.66666667	UP	3	1	3	1
84713	16.66666667	UP	3	1	3	1
85074	16.66666667	DOWN	3	1	3	1
85224	16.66666667	UP	3	1	2	2
85450	33.33333333	UP	2	2	2	2
85497	33.33333333	DOWN	2	2	2	2
85678	16.66666667	DOWN	3	1	3	1
85682	16.66666667	DOWN	3	1	3	1
86160	16.66666667	DOWN	3	1	2	2
86220	16.66666667	UP	3	1	3	1
108330	16.66666667	UP	3	1	2	3
108395	16.66666667	UP	3	1	3	1
109123	33.33333333	UP	2	2	2	2
109221	33.33333333	DOWN	2	2	2	2
109316	16.66666667	DOWN	10	1	3	5
109437	33.33333333	DOWN	2	2	2	2
110298	33.33333333	DOWN	2	2	2	2
110307	33.33333333	DOWN	2	2	2	2
110371	33.33333333	DOWN	2	2	2	2
110507	16.66666667	DOWN	3	1	3	1
110582	16.66666667	UP	5	1	2	2
110904	16.66666667	UP	3	1	2	2
110912	33.33333333	DOWN	2	2	2	2
111348	16.66666667	DOWN	3	1	3	1
111389	16.66666667	UP	5	1	2	2
112482	50	UP	2	3	2	3
113048	50	DOWN	2	3	2	3
113257	16.66666667	DOWN	3	1	3	1
115143	16.66666667	UP	3	1	3	1
118078	16.66666667	DOWN	3	1	3	1
119851	16.66666667	DOWN	10	1	10	1

Table 10

119882	16.66666667	UP	5	1	5	1
120106	50	DOWN	2	3	2	3
120138	33.33333333	DOWN	2	2	2	2
120189	33.33333333	DOWN	3	2	2	3
120544	16.66666667	UP	3	1	3	1
120707	16.66666667	DOWN	5	1	2	2
120881	16.66666667	UP	5	1	3	2
121018	16.66666667	DOWN	3	1	2	2
121275	33.33333333	UP	2	2	2	2
121722	16.66666667	UP	5	1	5	1
121857	16.66666667	UP	3	1	2	2
122159	16.66666667	DOWN	3	1	3	1
122183	16.66666667	DOWN	3	1	2	3
122321	50	UP	2	3	2	3
123061	33.33333333	DOWN	2	2	2	2
123255	16.66666667	DOWN	3	1	3	1
123264	16.66666667	UP	3	1	2	2
123474	16.66666667	UP	3	1	2	2
123561	33.33333333	DOWN	10	2	3	6
123695	16.66666667	DOWN	5	1	5	1
123926	16.66666667	DOWN	3	1	3	1
123980	33.33333333	DOWN	2	2	2	2
124064	33.33333333	UP	3	2	2	3
124071	50	DOWN	3	3	2	5
124128	33.33333333	DOWN	2	2	2	2
124239	33.33333333	DOWN	3	2	2	4
124252	16.66666667	DOWN	5	1	5	1
124427	16.66666667	DOWN	3	1	3	1
124510	33.33333333	DOWN	3	2	2	4
124753	16.66666667	UP	5	1	5	1
125148	50	DOWN	2	3	2	3
126341	83.33333333	DOWN	2	5	2	5
126413	16.66666667	DOWN	3	1	2	5
126419	50	DOWN	2	3	2	3
126513	50	DOWN	2	3	2	3
127063	50	DOWN	2	3	2	3
127147	33.33333333	DOWN	2	2	2	2
127610	16.66666667	DOWN	5	1	2	4
127710	50	DOWN	2	3	2	3
127841	16.66666667	UP	3	1	3	1
127931	16.66666667	DOWN	3	1	3	1
128083	16.66666667	DOWN	5	1	5	1
128126	50	UP	2	3	2	3
128457	16.66666667	DOWN	3	1	2	2
128738	33.33333333	DOWN	2	2	2	2
128792	33.33333333	DOWN	2	2	2	2
129032	16.66666667	DOWN	10	1	2	5
129387	16.66666667	DOWN	3	1	2	2
129477	16.66666667	UP	3	1	3	1

Table 10

129478	33.33333333	DOWN	2	2	2	2
129585	16.66666667	DOWN	3	1	2	3
129610	16.66666667	DOWN	3	1	3	1
129725	66.66666667	DOWN	2	4	2	4
129922	50	DOWN	2	3	2	3
130031	33.33333333	UP	2	2	2	2
130057	16.66666667	DOWN	5	1	2	2
130078	16.66666667	DOWN	3	1	3	1
130103	66.66666667	DOWN	2	4	2	4
130664	16.66666667	DOWN	10	1	10	1
130742	16.66666667	DOWN	5	1	5	1
130835	16.66666667	DOWN	3	1	3	1
131073	33.33333333	DOWN	2	2	2	2
131099	16.66666667	DOWN	3	1	2	4
131268	33.33333333	DOWN	10	2	5	5
131563	33.33333333	DOWN	2	2	2	2
131887	16.66666667	DOWN	3	1	2	4
132015	33.33333333	UP	2	2	2	2
132140	16.66666667	DOWN	10	1	5	2
132304	16.66666667	UP	3	1	2	2
132326	33.33333333	DOWN	2	2	2	2
132636	16.66666667	DOWN	3	1	2	2
133273	33.33333333	DOWN	2	2	2	2
134430	16.66666667	DOWN	3	1	2	2
134783	16.66666667	UP	5	1	2	5
134969	16.66666667	DOWN	5	1	5	1
134976	50	DOWN	2	3	2	3
135065	33.33333333	DOWN	3	2	2	3
135083	33.33333333	DOWN	2	2	2	2
135221	50	DOWN	5	3	5	3
135240	33.33333333	DOWN	2	2	2	2
135253	66.66666667	DOWN	2	4	2	4
135527	33.33333333	UP	3	2	2	4
135900	16.66666667	DOWN	3	1	2	3
135975	33.33333333	DOWN	2	2	2	2
136169	16.66666667	UP	3	1	3	1
136235	16.66666667	DOWN	3	1	2	2
136317	33.33333333	DOWN	2	2	2	2
136508	33.33333333	DOWN	3	2	2	4
136919	66.66666667	DOWN	2	4	2	4
137189	16.66666667	DOWN	3	1	3	1
137387	33.33333333	DOWN	2	2	2	2
137638	33.33333333	DOWN	2	2	2	2
137793	16.66666667	DOWN	3	1	3	1
137940	33.33333333	DOWN	5	2	5	2
138165	33.33333333	DOWN	2	2	2	2
138189	33.33333333	DOWN	2	2	2	2
138304	33.33333333	DOWN	2	2	2	2
138496	16.66666667	UP	3	1	2	3

Table 10

138775	16.66666667	DOWN	3	1	3	1
138788	16.66666667	DOWN	3	1	2	3
138978	33.33333333	DOWN	2	2	2	2
138991	16.66666667	UP	3	1	2	4
139009	33.33333333	UP	3	2	2	4
139062	33.33333333	DOWN	2	2	2	2
139226	16.66666667	DOWN	3	1	2	4
139540	16.66666667	UP	3	1	3	1
139681	33.33333333	UP	2	2	2	2
139766	16.66666667	DOWN	5	1	2	5
139771	16.66666667	DOWN	10	1	10	1
139835	83.33333333	DOWN	2	5	2	5
139892	50	DOWN	2	3	2	3
140100	16.66666667	DOWN	3	1	3	1
140150	16.66666667	UP	5	1	5	1
140240	66.66666667	DOWN	3	4	2	5
140301	33.33333333	UP	3	2	2	4
140455	33.33333333	DOWN	3	2	2	3
140830	16.66666667	UP	3	1	3	1
140831	16.66666667	DOWN	3	1	3	1
141230	16.66666667	DOWN	3	1	2	3
141258	16.66666667	DOWN	5	1	3	2
141768	16.66666667	UP	10	1	10	1
141845	33.33333333	DOWN	2	2	2	2
141852	16.66666667	UP	3	1	3	1
141854	50	DOWN	2	3	2	3
142326	16.66666667	UP	5	1	2	2
143169	16.66666667	DOWN	5	1	5	1
143322	33.33333333	UP	2	2	2	2
143661	16.66666667	UP	3	1	3	1
143846	33.33333333	DOWN	10	2	5	4
143887	50	DOWN	3	3	2	4
143962	33.33333333	DOWN	2	2	2	2
144786	50	UP	2	3	2	3
144880	16.66666667	DOWN	3	1	3	1
144916	33.33333333	DOWN	2	2	2	2
144924	50	DOWN	2	3	2	3
145740	16.66666667	UP	3	1	3	1
148225	16.66666667	DOWN	3	1	2	3
148743	16.66666667	DOWN	3	1	3	1
148968	16.66666667	UP	5	1	2	3
149013	50	DOWN	2	3	2	3
150135	33.33333333	UP	2	2	2	2
150702	100	DOWN	2	6	2	6
150897	33.33333333	UP	2	2	2	2
151055	33.33333333	DOWN	2	2	2	2
151184	33.33333333	UP	2	2	2	2
151240	16.66666667	DOWN	3	1	2	2
151365	50	DOWN	5	3	3	6

Table 10

151896	16.66666667	DOWN	3	1	3	1
152289	16.66666667	DOWN	10	1	2	5
153006	33.33333333	DOWN	2	2	2	2
153025	50	UP	2	3	2	3
153355	16.66666667	UP	5	1	2	3
153411	16.66666667	UP	3	1	2	2
153505	33.33333333	DOWN	2	2	2	2
153617	16.66666667	DOWN	3	1	3	1
153646	50	UP	5	3	2	5
153977	33.33333333	DOWN	2	2	2	2
154172	16.66666667	DOWN	3	1	2	3
154790	33.33333333	DOWN	2	2	2	2
155201	33.33333333	DOWN	2	2	2	2
155806	16.66666667	DOWN	5	1	2	4
159608	50	DOWN	10	3	3	5
159623	16.66666667	UP	5	1	5	1
159725	33.33333333	DOWN	5	2	2	5
160192	50	DOWN	2	3	2	3
160532	16.66666667	DOWN	3	1	3	1
161456	33.33333333	DOWN	5	2	3	4
162211	33.33333333	DOWN	2	2	2	2
162491	16.66666667	UP	5	1	2	2
162775	33.33333333	DOWN	3	2	3	2
166530	50	DOWN	2	3	2	3
166616	16.66666667	DOWN	3	1	3	1
167205	16.66666667	DOWN	3	1	3	1
171753	33.33333333	DOWN	2	2	2	2
171916	33.33333333	UP	2	2	2	2
171973	16.66666667	UP	3	1	2	3
172139	33.33333333	UP	2	2	2	2
175103	16.66666667	DOWN	3	1	2	2
177074	33.33333333	DOWN	2	2	2	2
178860	16.66666667	DOWN	5	1	2	4
179276	33.33333333	DOWN	5	2	2	4
179500	16.66666667	UP	3	1	2	4
179603	33.33333333	DOWN	2	2	2	2
180082	33.33333333	DOWN	2	2	2	2
183103	16.66666667	UP	3	1	3	1
183281	16.66666667	DOWN	5	1	2	4
183337	16.66666667	UP	3	1	3	1
186132	33.33333333	UP	2	2	2	2
186767	50	UP	2	3	2	3
186918	33.33333333	DOWN	2	2	2	2
186982	33.33333333	DOWN	2	2	2	2
187266	16.66666667	UP	3	1	3	1
188036	16.66666667	DOWN	5	1	2	5
190305	16.66666667	DOWN	3	1	3	1
190325	16.66666667	DOWN	3	1	3	1
190732	16.66666667	UP	3	1	3	1

Table 10

190915	16.66666667	DOWN	3	1	3	1
191015	66.66666667	DOWN	3	4	2	6
191107	16.66666667	DOWN	3	1	3	1
191569	16.66666667	DOWN	3	1	3	1
191664	16.66666667	UP	5	1	3	4
191904	33.33333333	DOWN	2	2	2	2
192401	50	DOWN	5	3	3	5
193476	16.66666667	DOWN	3	1	3	1
193518	16.66666667	UP	10	1	2	2
193617	33.33333333	UP	3	2	3	2
193883	50	DOWN	2	3	2	3
193892	33.33333333	DOWN	2	2	2	2
194704	33.33333333	DOWN	2	2	2	2
194723	16.66666667	DOWN	3	1	3	1
195346	16.66666667	DOWN	3	1	2	2
195875	16.66666667	UP	3	1	3	1
196005	33.33333333	DOWN	2	2	2	2
196070	16.66666667	DOWN	3	1	3	1
196115	16.66666667	UP	5	1	5	1
196189	50	DOWN	2	3	2	3
196387	16.66666667	UP	3	1	3	1
196543	16.66666667	UP	50	1	50	1
196612	33.33333333	UP	5	2	2	3
196650	16.66666667	DOWN	3	1	3	1
196860	16.66666667	DOWN	3	1	2	2
197056	33.33333333	DOWN	2	2	2	2
197525	33.33333333	DOWN	3	2	3	2
197676	33.33333333	DOWN	2	2	2	2
197779	16.66666667	DOWN	5	1	5	1
197821	16.66666667	DOWN	3	1	3	1
197831	16.66666667	DOWN	5	1	5	1
197903	33.33333333	UP	2	2	2	2
198820	16.66666667	UP	3	1	3	1
198960	50	DOWN	3	3	2	4
199158	33.33333333	DOWN	2	2	2	2
199180	33.33333333	DOWN	2	2	2	2
199185	16.66666667	DOWN	3	1	2	2
199367	16.66666667	DOWN	3	1	3	1
199577	50	DOWN	2	3	2	3
199628	16.66666667	UP	5	1	5	1
199635	33.33333333	DOWN	5	2	3	3
200656	16.66666667	DOWN	3	1	2	3
201173	33.33333333	DOWN	2	2	2	2
201203	33.33333333	DOWN	2	2	2	2
201274	33.33333333	DOWN	2	2	2	2
201440	33.33333333	DOWN	2	2	2	2
201586	16.66666667	DOWN	3	1	2	2
201727	50	UP	2	3	2	3
201757	33.33333333	UP	2	2	2	2

Table 10

201890	33.33333333	DOWN	2	2	2	2
201931	16.66666667	DOWN	3	1	3	1
202154	66.66666667	UP	2	4	2	4
202209	16.66666667	DOWN	3	1	2	2
202357	33.33333333	DOWN	2	2	2	2
202535	16.66666667	DOWN	3	1	2	2
202682	16.66666667	DOWN	3	1	3	1
203132	16.66666667	DOWN	10	1	2	5
203348	33.33333333	DOWN	2	2	2	2
204214	16.66666667	UP	5	1	5	1
204257	33.33333333	UP	2	2	2	2
204465	33.33333333	DOWN	2	2	2	2
204478	50	DOWN	2	3	2	3
204545	16.66666667	UP	3	1	2	2
204624	16.66666667	DOWN	3	1	3	1
204661	33.33333333	DOWN	2	2	2	2
204686	16.66666667	UP	3	1	3	1
204688	33.33333333	DOWN	2	2	2	2
205049	16.66666667	UP	3	1	2	4
205497	33.33333333	DOWN	2	2	2	2
205527	66.66666667	DOWN	2	4	2	4
205633	16.66666667	UP	5	1	2	4
206370	33.33333333	DOWN	3	2	2	5
206779	16.66666667	DOWN	3	1	3	1
206785	16.66666667	DOWN	3	1	3	1
206838	33.33333333	DOWN	3	2	2	4
207016	16.66666667	DOWN	3	1	2	3
207558	16.66666667	UP	3	1	2	3
207735	16.66666667	DOWN	3	1	2	5
208027	16.66666667	DOWN	3	1	3	1
209042	33.33333333	DOWN	2	2	2	2
209137	16.66666667	UP	3	1	3	1
209436	33.33333333	UP	2	2	2	2
209655	50	DOWN	2	3	2	3
209756	16.66666667	DOWN	3	1	2	2
210405	33.33333333	DOWN	2	2	2	2
210687	16.66666667	UP	5	1	5	1
210789	50	DOWN	2	3	2	3
210820	16.66666667	DOWN	3	1	3	1
211758	16.66666667	DOWN	5	1	3	4
211865	16.66666667	UP	3	1	3	1
212325	33.33333333	DOWN	2	2	2	2
212496	50	DOWN	2	3	2	3
212542	16.66666667	DOWN	3	1	2	3
212649	16.66666667	DOWN	3	1	2	2
212698	16.66666667	DOWN	3	1	3	1
213634	16.66666667	DOWN	3	1	3	1
214006	33.33333333	DOWN	2	2	2	2
214068	16.66666667	DOWN	5	1	5	1

Table 10

214136	33.33333333	DOWN	2	2	2	2
214162	33.33333333	DOWN	3	2	2	3
214441	16.66666667	UP	3	1	3	1
214809	33.33333333	DOWN	2	2	2	2
214823	33.33333333	DOWN	2	2	2	2
215000	16.66666667	DOWN	3	1	3	1
219961	33.33333333	DOWN	2	2	2	2
220069	16.66666667	DOWN	5	1	2	2
220096	16.66666667	DOWN	3	1	3	1
220372	16.66666667	UP	5	1	3	2
222157	50	DOWN	3	3	2	5
223043	100	DOWN	10	6	10	6
223121	33.33333333	DOWN	3	2	2	5
223350	33.33333333	UP	5	2	3	3
229467	16.66666667	DOWN	3	1	2	2
230016	33.33333333	DOWN	2	2	2	2
230370	33.33333333	DOWN	2	2	2	2
230440	16.66666667	DOWN	3	1	3	1
230560	16.66666667	DOWN	3	1	2	3
231472	33.33333333	DOWN	2	2	2	2
231574	50	DOWN	3	3	2	6
232772	16.66666667	DOWN	3	1	2	2
232860	33.33333333	DOWN	3	2	3	2
233199	16.66666667	DOWN	5	1	2	5
233464	33.33333333	DOWN	2	2	2	2
233688	33.33333333	UP	2	2	2	2
233759	16.66666667	DOWN	3	1	3	1
233909	33.33333333	DOWN	2	2	2	2
233927	16.66666667	DOWN	3	1	3	1
234127	16.66666667	DOWN	3	1	3	1
235938	33.33333333	DOWN	2	2	2	2
236034	16.66666667	DOWN	3	1	2	2
236059	16.66666667	UP	3	1	3	1
236129	33.33333333	DOWN	2	2	2	2
238661	16.66666667	DOWN	5	1	5	1
239611	16.66666667	UP	3	1	3	1
240518	16.66666667	UP	3	1	3	1
240663	16.66666667	DOWN	5	1	2	6
240961	16.66666667	DOWN	5	1	2	4
240977	33.33333333	DOWN	2	2	2	2
241171	16.66666667	DOWN	3	1	2	2
241348	33.33333333	DOWN	2	2	2	2
241736	16.66666667	UP	3	1	2	2
241788	16.66666667	UP	3	1	3	1
241847	33.33333333	UP	2	2	2	2
241985	50	DOWN	2	3	2	3
242061	50	DOWN	2	3	2	3
242070	33.33333333	DOWN	2	2	2	2
242778	16.66666667	DOWN	5	1	2	3

Table 10

243199	33.33333333	DOWN	2	2	2	2
243347	33.33333333	DOWN	2	2	2	2
243641	33.33333333	DOWN	2	2	2	2
243648	16.66666667	DOWN	3	1	3	1
243653	33.33333333	DOWN	2	2	2	2
243700	33.33333333	DOWN	2	2	2	2
243741	33.33333333	UP	3	2	2	3
243784	16.66666667	DOWN	3	1	2	2
244062	16.66666667	UP	25	1	25	1
244147	33.33333333	UP	2	2	2	2
244323	16.66666667	DOWN	3	1	3	1
244347	16.66666667	DOWN	3	1	2	2
244355	16.66666667	UP	3	1	3	1
244637	16.66666667	UP	3	1	3	1
244767	16.66666667	UP	3	1	3	1
244879	33.33333333	DOWN	2	2	2	2
244951	33.33333333	DOWN	2	2	2	2
245147	16.66666667	UP	3	1	3	1
245174	33.33333333	DOWN	2	2	2	2
245277	16.66666667	DOWN	5	1	2	6
245409	16.66666667	DOWN	3	1	3	1
245457	50	DOWN	2	3	2	3
245577	33.33333333	UP	2	2	2	2
245853	16.66666667	DOWN	3	1	2	2
245860	16.66666667	DOWN	3	1	3	1
245990	16.66666667	DOWN	3	1	2	3
246239	16.66666667	DOWN	5	1	5	1
246377	33.33333333	DOWN	3	2	2	5
246430	50	DOWN	2	3	2	3
246524	16.66666667	UP	3	1	3	1
246872	16.66666667	DOWN	3	1	3	1
247117	16.66666667	DOWN	3	1	2	3
247177	33.33333333	DOWN	2	2	2	2
247660	83.33333333	DOWN	3	5	3	5
248020	33.33333333	DOWN	2	2	2	2
248261	16.66666667	UP	3	1	3	1
248412	16.66666667	UP	3	1	3	1
248478	16.66666667	DOWN	3	1	3	1
248545	33.33333333	DOWN	2	2	2	2
249603	33.33333333	DOWN	2	2	2	2
249784	50	DOWN	5	3	2	6
249995	33.33333333	DOWN	2	2	2	2
250654	33.33333333	UP	2	2	2	2
250812	33.33333333	UP	2	2	2	2
250869	16.66666667	DOWN	3	1	3	1
250883	16.66666667	DOWN	3	1	2	2
251019	16.66666667	DOWN	10	1	10	1
251452	33.33333333	DOWN	2	2	2	2
251685	50	UP	2	3	2	3

Table 10

251826	16.66666667	DOWN	3	1	3	1
252382	16.66666667	DOWN	3	1	3	1
252515	16.66666667	UP	25	1	2	2
252663	16.66666667	DOWN	5	1	5	1
252953	16.66666667	DOWN	3	1	3	1
253246	16.66666667	DOWN	3	1	3	1
253253	16.66666667	DOWN	3	1	3	1
253532	16.66666667	DOWN	3	1	3	1
253534	16.66666667	DOWN	3	1	3	1
253577	16.66666667	DOWN	3	1	3	1
253865	16.66666667	DOWN	3	1	3	1
253931	16.66666667	DOWN	5	1	5	1
254117	16.66666667	DOWN	10	1	10	1
254229	16.66666667	DOWN	5	1	5	1
254276	16.66666667	DOWN	3	1	3	1
254355	16.66666667	DOWN	3	1	3	1
254662	16.66666667	DOWN	5	1	5	1
255182	16.66666667	DOWN	5	1	5	1
255285	16.66666667	DOWN	5	1	5	1
255333	16.66666667	UP	3	1	3	1
255754	33.33333333	DOWN	2	2	2	2
256664	33.33333333	UP	2	2	2	2
257162	16.66666667	DOWN	5	1	2	2
257329	16.66666667	DOWN	3	1	2	2
257608	33.33333333	UP	2	2	2	2
258235	16.66666667	UP	3	1	3	1
258300	33.33333333	DOWN	2	2	2	2
258454	33.33333333	UP	2	2	2	2
258860	33.33333333	UP	2	2	2	2
259344	33.33333333	DOWN	2	2	2	2
259350	33.33333333	DOWN	2	2	2	2
259406	33.33333333	DOWN	3	2	2	4
260170	16.66666667	DOWN	5	1	2	4
262060	16.66666667	UP	3	1	2	5
262823	16.66666667	UP	3	1	3	1
262920	50	DOWN	2	3	2	3
263013	50	UP	2	3	2	3
263014	50	DOWN	3	3	2	4
263047	16.66666667	DOWN	5	1	2	4
263716	16.66666667	UP	3	1	2	3
264162	16.66666667	DOWN	5	1	2	2
264938	16.66666667	DOWN	5	1	2	4
265350	33.33333333	DOWN	2	2	2	2
265680	16.66666667	DOWN	3	1	2	3
265694	33.33333333	UP	3	2	3	2
265853	50	UP	3	3	3	3
266093	33.33333333	DOWN	2	2	2	2
266106	50	DOWN	2	3	2	3
266146	16.66666667	UP	3	1	3	1

Table 10

266500	33.33333333	UP	2	2	2	2
266727	16.66666667	DOWN	3	1	3	1
267135	16.66666667	DOWN	3	1	2	2
267666	16.66666667	DOWN	3	1	2	2
267691	33.33333333	DOWN	2	2	2	2
267808	16.66666667	DOWN	3	1	3	1
268385	33.33333333	DOWN	2	2	2	2
268387	16.66666667	DOWN	3	1	3	1
268476	16.66666667	UP	5	1	5	1
268692	33.33333333	UP	2	2	2	2
269269	66.66666667	DOWN	3	4	2	5
269425	50	UP	2	3	2	3
270505	66.66666667	DOWN	2	4	2	4
270535	16.66666667	DOWN	3	1	2	2
270558	16.66666667	DOWN	3	1	3	1
270826	33.33333333	DOWN	3	2	3	2
271038	16.66666667	DOWN	3	1	3	1
271050	50	DOWN	2	3	2	3
271737	33.33333333	UP	2	2	2	2
271744	16.66666667	DOWN	5	1	2	6
271863	33.33333333	DOWN	2	2	2	2
271865	33.33333333	UP	2	2	2	2
271899	33.33333333	UP	2	2	2	2
271989	50	DOWN	2	3	2	3
272049	16.66666667	DOWN	3	1	3	1
272183	33.33333333	DOWN	2	2	2	2
272200	33.33333333	DOWN	2	2	2	2
272468	33.33333333	DOWN	2	2	2	2
272507	33.33333333	DOWN	2	2	2	2
272576	33.33333333	DOWN	2	2	2	2
274169	33.33333333	DOWN	2	2	2	2
274529	16.66666667	DOWN	3	1	2	2
275226	33.33333333	DOWN	2	2	2	2
275642	33.33333333	DOWN	2	2	2	2
276412	16.66666667	UP	3	1	3	1
276502	16.66666667	UP	3	1	3	1
276523	33.33333333	UP	3	2	3	2
276920	33.33333333	UP	2	2	2	2
277021	16.66666667	DOWN	3	1	3	1
277074	33.33333333	UP	2	2	2	2
277173	16.66666667	UP	5	1	5	1
277423	50	DOWN	2	3	2	3
277463	33.33333333	UP	2	2	2	2
277476	33.33333333	UP	2	2	2	2
277537	33.33333333	DOWN	2	2	2	2
277596	33.33333333	UP	2	2	2	2
277761	50	UP	3	3	3	3
278240	33.33333333	UP	2	2	2	2
278430	50	DOWN	2	3	2	3

Table 10

279077	33.33333333	DOWN	2	2	2	2
279195	16.66666667	UP	10	1	10	1
279504	16.66666667	UP	3	1	3	1
279559	16.66666667	DOWN	3	1	2	2
279720	16.66666667	DOWN	3	1	2	2
279837	50	DOWN	2	3	2	3
279838	33.33333333	DOWN	2	2	2	2
279963	16.66666667	UP	3	1	3	1
280000	33.33333333	DOWN	2	2	2	2
280308	16.66666667	DOWN	3	1	3	1
280465	50	DOWN	3	3	2	4
280528	33.33333333	DOWN	2	2	2	2
280602	16.66666667	DOWN	5	1	2	2
280782	33.33333333	UP	3	2	3	2
280784	50	DOWN	2	3	2	3
281003	33.33333333	DOWN	2	2	2	2
281010	16.66666667	DOWN	3	1	2	2
281053	33.33333333	DOWN	2	2	2	2
281072	16.66666667	UP	3	1	2	2
281240	33.33333333	UP	2	2	2	2
281467	16.66666667	UP	3	1	3	1
281521	33.33333333	DOWN	2	2	2	2
281625	16.66666667	UP	3	1	2	3
281733	33.33333333	DOWN	2	2	2	2
281904	33.33333333	DOWN	2	2	2	2
281908	16.66666667	UP	5	1	2	4
281934	33.33333333	UP	3	2	2	4
281936	16.66666667	DOWN	5	1	3	6
282000	33.33333333	UP	2	2	2	2
282144	16.66666667	DOWN	5	1	2	2
282283	33.33333333	UP	2	2	2	2
282446	16.66666667	DOWN	3	1	3	1
282564	16.66666667	DOWN	5	1	2	3
282884	16.66666667	DOWN	3	1	2	3
282977	16.66666667	UP	3	1	3	1
283080	33.33333333	DOWN	2	2	2	2
283089	16.66666667	DOWN	3	1	2	2
283099	33.33333333	DOWN	2	2	2	2
283118	33.33333333	DOWN	2	2	2	2
283142	50	DOWN	2	3	2	3
283252	16.66666667	UP	3	1	2	2
283301	33.33333333	DOWN	2	2	2	2
283398	16.66666667	DOWN	3	1	2	5
283461	33.33333333	DOWN	2	2	2	2
284341	16.66666667	DOWN	3	1	2	4
284524	16.66666667	UP	5	1	5	1
284531	33.33333333	UP	2	2	2	2
284564	16.66666667	UP	5	1	5	1
284689	33.33333333	DOWN	2	2	2	2

Table 10

285207	16.66666667	DOWN	5	1	5	1
285323	16.66666667	DOWN	3	1	3	1
285460	16.66666667	DOWN	5	1	5	1
285503	16.66666667	DOWN	5	1	5	1
285636	16.66666667	DOWN	3	1	3	1
285780	16.66666667	UP	3	1	2	3
286530	16.66666667	DOWN	3	1	3	1
287258	16.66666667	DOWN	5	1	5	1
287349	16.66666667	DOWN	3	1	3	1
287646	33.33333333	DOWN	2	2	2	2
287687	16.66666667	DOWN	3	1	2	3
288807	16.66666667	UP	3	1	3	1
288894	50	DOWN	2	3	2	3
288896	16.66666667	DOWN	3	1	2	2
288959	33.33333333	DOWN	3	2	2	4
288999	16.66666667	DOWN	3	1	3	1
289125	16.66666667	UP	3	1	3	1
289264	33.33333333	UP	2	2	2	2
289283	16.66666667	DOWN	3	1	3	1
289337	16.66666667	UP	10	1	3	2
289428	33.33333333	DOWN	2	2	2	2
289496	33.33333333	DOWN	3	2	3	2
289647	16.66666667	DOWN	3	1	2	3
290091	16.66666667	DOWN	10	1	2	5
290476	50	DOWN	2	3	2	3
290866	16.66666667	UP	3	1	3	1
291057	16.66666667	DOWN	3	1	2	2
291083	33.33333333	DOWN	2	2	2	2
291272	16.66666667	DOWN	3	1	3	1
291342	16.66666667	UP	3	1	3	1
291345	16.66666667	DOWN	3	1	2	2
291462	16.66666667	DOWN	3	1	2	2
291690	16.66666667	UP	3	1	3	1
291827	33.33333333	DOWN	2	2	2	2
291880	33.33333333	UP	3	2	2	3
292042	50	DOWN	5	3	2	6
292212	16.66666667	DOWN	3	1	2	2
292399	33.33333333	DOWN	2	2	2	2
292424	33.33333333	UP	3	2	3	2
292482	33.33333333	DOWN	2	2	2	2
292531	33.33333333	DOWN	2	2	2	2
292936	33.33333333	DOWN	2	2	2	2
293078	16.66666667	UP	3	1	2	2
293104	33.33333333	DOWN	2	2	2	2
293325	16.66666667	UP	3	1	3	1
293331	16.66666667	UP	3	1	2	2
293339	16.66666667	DOWN	3	1	3	1
293569	16.66666667	DOWN	3	1	2	2
293579	16.66666667	DOWN	3	1	3	1

Table 10

293683	33.33333333	DOWN	3	2	2	3
293901	33.33333333	DOWN	2	2	2	2
294221	83.33333333	DOWN	3	5	2	6
294259	33.33333333	DOWN	2	2	2	2
294487	16.66666667	DOWN	3	1	2	2
294496	16.66666667	DOWN	3	1	2	3
294535	33.33333333	DOWN	2	2	2	2
294578	16.66666667	DOWN	50	1	3	6
294995	33.33333333	DOWN	2	2	2	2
295939	50	DOWN	2	3	2	3
295982	16.66666667	DOWN	3	1	2	2
296032	33.33333333	UP	2	2	2	2
296155	16.66666667	UP	3	1	3	1
296448	16.66666667	DOWN	5	1	5	1
296483	16.66666667	DOWN	3	1	2	5
296556	16.66666667	UP	3	1	2	2
296568	33.33333333	UP	2	2	2	2
296616	16.66666667	UP	3	1	3	1
296679	33.33333333	DOWN	2	2	2	2
296702	33.33333333	UP	3	2	3	2
297392	16.66666667	DOWN	3	1	2	3
297439	16.66666667	DOWN	3	1	3	1
297899	16.66666667	DOWN	3	1	3	1
298065	16.66666667	UP	5	1	5	1
298143	16.66666667	DOWN	3	1	3	1
298417	16.66666667	DOWN	5	1	2	6
298766	16.66666667	UP	3	1	3	1
298770	33.33333333	UP	2	2	2	2
299197	16.66666667	UP	5	1	3	3
299664	33.33333333	UP	2	2	2	2
299679	16.66666667	DOWN	3	1	2	2
299723	16.66666667	DOWN	3	1	2	2
300038	66.66666667	DOWN	2	4	2	4
301122	16.66666667	DOWN	10	1	3	6
301504	16.66666667	UP	5	1	5	1
301995	16.66666667	DOWN	5	1	2	3
302025	33.33333333	DOWN	2	2	2	2
302591	16.66666667	DOWN	3	1	2	3
302885	83.33333333	DOWN	3	5	3	5
303035	33.33333333	DOWN	2	2	2	2
305481	16.66666667	DOWN	3	1	2	3
305677	16.66666667	DOWN	3	1	2	2
306013	16.66666667	UP	3	1	3	1
306771	16.66666667	UP	3	1	2	2
306829	33.33333333	UP	3	2	3	2
306841	16.66666667	UP	3	1	3	1
307249	16.66666667	DOWN	3	1	3	1
307337	16.66666667	DOWN	3	1	3	1
307687	16.66666667	DOWN	3	1	2	3

Table 10

307774	16.66666667	DOWN	3	1	3	1
308437	50	DOWN	2	3	2	3
308989	33.33333333	DOWN	2	2	2	2
309316	16.66666667	DOWN	3	1	3	1
309447	66.66666667	DOWN	3	4	2	5
309515	16.66666667	UP	3	1	2	3
309895	16.66666667	UP	3	1	3	1
310406	16.66666667	UP	3	1	3	1
320343	16.66666667	DOWN	3	1	3	1
320345	16.66666667	DOWN	3	1	2	4
320424	16.66666667	UP	10	1	2	2
320770	16.66666667	UP	3	1	3	1
320794	16.66666667	DOWN	3	1	2	2
320871	16.66666667	DOWN	3	1	3	1
321574	33.33333333	UP	2	2	2	2
321706	16.66666667	UP	3	1	3	1
322005	50	DOWN	2	3	2	3
322024	16.66666667	DOWN	3	1	3	1
322051	16.66666667	DOWN	3	1	3	1
322175	33.33333333	DOWN	3	2	2	4
322223	16.66666667	DOWN	3	1	3	1
322461	33.33333333	DOWN	10	2	2	6
322723	33.33333333	UP	3	2	2	4
323238	16.66666667	UP	3	1	3	1
323371	16.66666667	DOWN	3	1	3	1
323429	33.33333333	UP	2	2	2	2
323465	50	DOWN	2	3	2	3
323611	33.33333333	UP	2	2	2	2
324225	16.66666667	DOWN	3	1	3	1
324307	50	DOWN	3	3	2	5
324492	16.66666667	DOWN	3	1	2	2
324513	16.66666667	UP	3	1	2	3
324655	33.33333333	UP	2	2	2	2
324672	16.66666667	DOWN	3	1	2	2
324690	50	UP	2	3	2	3
324715	33.33333333	DOWN	3	2	2	4
324749	16.66666667	UP	3	1	3	1
324951	16.66666667	UP	3	1	2	3
325062	16.66666667	DOWN	3	1	2	5
325090	33.33333333	DOWN	2	2	2	2
325128	16.66666667	UP	3	1	3	1
325220	16.66666667	DOWN	3	1	3	1
325513	33.33333333	DOWN	3	2	3	2
325641	33.33333333	DOWN	2	2	2	2
327461	33.33333333	DOWN	2	2	2	2
327676	16.66666667	UP	3	1	3	1
328287	50	DOWN	5	3	3	4
328613	33.33333333	DOWN	2	2	2	2
340555	33.33333333	DOWN	2	2	2	2

Table 10

340657	16.66666667	UP	5	1	5	1
340712	33.33333333	DOWN	2	2	2	2
340722	33.33333333	DOWN	2	2	2	2
340864	33.33333333	DOWN	2	2	2	2
341083	16.66666667	DOWN	3	1	3	1
341295	16.66666667	UP	3	1	3	1
341310	33.33333333	UP	2	2	2	2
341588	16.66666667	UP	3	1	3	1
341706	16.66666667	DOWN	3	1	3	1
342008	16.66666667	UP	3	1	3	1
342089	16.66666667	UP	3	1	2	2
342232	16.66666667	DOWN	3	1	2	2
342640	16.66666667	DOWN	3	1	3	1
342740	50	DOWN	3	3	2	5
343538	16.66666667	UP	3	1	3	1
343700	16.66666667	DOWN	3	1	3	1
343736	16.66666667	UP	5	1	2	4
343867	33.33333333	UP	2	2	2	2
343871	33.33333333	UP	2	2	2	2
343977	33.33333333	UP	2	2	2	2
343990	16.66666667	UP	3	1	2	3
344073	50	DOWN	2	3	2	3
344126	16.66666667	UP	10	1	2	2
344134	16.66666667	DOWN	3	1	2	2
344141	16.66666667	UP	3	1	2	2
344505	16.66666667	UP	5	1	2	4
344588	83.33333333	DOWN	3	5	3	5
344806	16.66666667	UP	25	1	5	2
344958	16.66666667	UP	3	1	2	3
345034	16.66666667	UP	5	1	5	1
345055	50	DOWN	2	3	2	3
345056	33.33333333	DOWN	2	2	2	2
345069	16.66666667	UP	3	1	3	1
345081	33.33333333	DOWN	2	2	2	2
345103	16.66666667	DOWN	3	1	3	1
345123	33.33333333	DOWN	2	2	2	2
345247	16.66666667	DOWN	3	1	2	4
345553	33.33333333	DOWN	2	2	2	2
345601	50	UP	2	3	2	3
345626	16.66666667	UP	50	1	5	2
345663	16.66666667	UP	3	1	3	1
345680	66.66666667	DOWN	3	4	3	4
345761	16.66666667	DOWN	3	1	3	1
345849	16.66666667	UP	3	1	3	1
345957	16.66666667	UP	3	1	2	2
346281	16.66666667	UP	3	1	2	3
346308	16.66666667	DOWN	3	1	3	1
346321	16.66666667	DOWN	10	1	2	5
346583	50	DOWN	2	3	2	3

Table 10

346643	33.33333333	DOWN	2	2	2	2
346997	16.66666667	DOWN	3	1	2	4
347213	16.66666667	DOWN	3	1	2	4
347345	66.66666667	DOWN	3	4	2	5
347378	16.66666667	DOWN	3	1	3	1
347702	33.33333333	UP	2	2	2	2
347726	33.33333333	DOWN	3	2	2	3
356863	16.66666667	DOWN	5	1	2	3
356883	16.66666667	DOWN	3	1	2	3
357031	16.66666667	UP	3	1	2	3
357278	16.66666667	DOWN	3	1	3	1
357364	50	UP	3	3	3	3
357373	33.33333333	DOWN	3	2	3	2
358217	16.66666667	DOWN	3	1	2	4
358314	16.66666667	DOWN	3	1	2	3
358468	16.66666667	UP	3	1	2	2
358549	16.66666667	UP	3	1	3	1
358838	50	DOWN	2	3	2	3
358850	16.66666667	DOWN	3	1	3	1
359040	16.66666667	DOWN	3	1	3	1
359661	16.66666667	UP	3	1	3	1
359733	33.33333333	DOWN	2	2	2	2
359781	16.66666667	UP	3	1	3	1
359835	33.33333333	UP	2	2	2	2
359855	16.66666667	DOWN	3	1	3	1
360025	16.66666667	UP	3	1	3	1
360403	33.33333333	DOWN	3	2	2	4
360478	33.33333333	DOWN	2	2	2	2
360743	16.66666667	DOWN	5	1	5	1
360861	33.33333333	UP	2	2	2	2
361048	33.33333333	DOWN	3	2	2	3
361069	16.66666667	UP	3	1	3	1
361323	16.66666667	DOWN	3	1	3	1
361363	16.66666667	DOWN	3	1	2	3
361526	33.33333333	DOWN	2	2	2	2
361653	16.66666667	UP	3	1	2	3
361656	16.66666667	DOWN	3	1	3	1
361668	33.33333333	DOWN	3	2	3	2
361798	16.66666667	DOWN	3	1	2	2
361899	33.33333333	DOWN	2	2	2	2
361974	50	DOWN	2	3	2	3
361996	33.33333333	UP	3	2	3	2
362059	50	DOWN	5	3	2	6
362278	16.66666667	UP	3	1	2	3
362409	50	DOWN	2	3	2	3
362628	50	DOWN	2	3	2	3
362729	16.66666667	UP	3	1	2	2
362732	16.66666667	UP	3	1	3	1
362926	16.66666667	DOWN	5	1	2	3

Table 10

363007	33.33333333	DOWN	3	2	2	6
363086	16.66666667	DOWN	5	1	5	1
363590	33.33333333	DOWN	3	2	3	2
363916	33.33333333	DOWN	2	2	2	2
364141	50	DOWN	3	3	2	4
364324	33.33333333	DOWN	2	2	2	2
364436	16.66666667	UP	3	1	2	2
364681	16.66666667	UP	3	1	3	1
364921	16.66666667	DOWN	3	1	3	1
365085	33.33333333	UP	2	2	2	2
365177	33.33333333	UP	2	2	2	2
365227	16.66666667	DOWN	3	1	2	2
365665	16.66666667	DOWN	25	1	3	3
366414	16.66666667	UP	3	1	2	2
366526	16.66666667	DOWN	5	1	5	1
366663	33.33333333	DOWN	3	2	2	6
366708	16.66666667	UP	5	1	5	1
366815	16.66666667	DOWN	3	1	3	1
366971	33.33333333	UP	2	2	2	2
375682	33.33333333	DOWN	2	2	2	2
376643	50	UP	2	3	2	3
377081	16.66666667	UP	5	1	2	2
377275	16.66666667	DOWN	5	1	5	1
377441	16.66666667	UP	25	1	25	1
377468	33.33333333	DOWN	2	2	2	2
377560	16.66666667	UP	3	1	3	1
377573	16.66666667	DOWN	3	1	2	3
377692	16.66666667	UP	3	1	2	4
377728	50	DOWN	2	3	2	3
377731	16.66666667	DOWN	10	1	3	6
377801	16.66666667	UP	5	1	2	4
377827	16.66666667	UP	3	1	3	1
377898	33.33333333	DOWN	3	2	2	4
377987	33.33333333	DOWN	5	2	2	4
378488	16.66666667	DOWN	3	1	2	3
378813	16.66666667	UP	3	1	3	1
379709	16.66666667	DOWN	3	1	3	1
379920	16.66666667	UP	3	1	3	1
379941	33.33333333	UP	2	2	2	2
380883	33.33333333	DOWN	2	2	2	2
380890	16.66666667	DOWN	3	1	2	3
380941	33.33333333	UP	2	2	2	2
381023	50	DOWN	2	3	2	3
381036	16.66666667	DOWN	5	1	2	2
382564	16.66666667	DOWN	5	1	2	6
382659	16.66666667	UP	5	1	2	4
382773	33.33333333	UP	3	2	3	2
383175	33.33333333	UP	2	2	2	2
383199	16.66666667	UP	5	1	5	1

Table 10

383554	16.66666667	UP	3	1	2	2
383851	16.66666667	UP	3	1	3	1
384015	16.66666667	UP	10	1	10	1
384634	33.33333333	UP	2	2	2	2
384740	16.66666667	UP	3	1	3	1
384939	16.66666667	DOWN	3	1	3	1
384968	16.66666667	UP	3	1	3	1
392624	33.33333333	DOWN	2	2	2	2
392630	16.66666667	DOWN	5	1	2	4
395417	16.66666667	DOWN	3	1	2	2
395573	16.66666667	DOWN	3	1	2	2
399054	16.66666667	UP	3	1	3	1
399075	16.66666667	UP	3	1	3	1
399331	16.66666667	DOWN	3	1	2	2
413633	33.33333333	UP	2	2	2	2
414994	50	UP	2	3	2	3
415122	33.33333333	DOWN	2	2	2	2
415145	16.66666667	DOWN	5	1	2	5
415191	33.33333333	UP	2	2	2	2
415215	33.33333333	DOWN	2	2	2	2
415229	16.66666667	DOWN	3	1	2	2
415250	33.33333333	DOWN	2	2	2	2
415589	16.66666667	UP	5	1	5	1
415700	50	DOWN	2	3	2	3
415851	33.33333333	DOWN	2	2	2	2
416042	33.33333333	UP	2	2	2	2
416280	33.33333333	DOWN	3	2	3	2
416305	33.33333333	DOWN	2	2	2	2
416436	33.33333333	DOWN	2	2	2	2
416479	16.66666667	UP	5	1	2	2
416525	16.66666667	UP	3	1	2	2
416567	16.66666667	DOWN	10	1	2	5
416611	16.66666667	DOWN	5	1	3	2
416659	50	DOWN	2	3	2	3
416745	33.33333333	UP	2	2	2	2
416833	50	DOWN	2	3	2	3
417075	16.66666667	UP	25	1	2	2
417318	16.66666667	DOWN	3	1	2	3
417388	16.66666667	DOWN	3	1	2	3
417393	16.66666667	DOWN	3	1	2	3
417404	16.66666667	DOWN	5	1	5	1
417711	16.66666667	UP	3	1	2	3
417730	16.66666667	DOWN	3	1	3	1
417748	33.33333333	DOWN	2	2	2	2
417777	16.66666667	UP	5	1	5	1
417867	33.33333333	DOWN	2	2	2	2
418098	33.33333333	DOWN	2	2	2	2
418318	66.66666667	DOWN	3	4	3	4
427754	33.33333333	UP	2	2	2	2

Table 10

427767	16.66666667	DOWN	3	1	3	1
427877	33.33333333	DOWN	2	2	2	2
428043	33.33333333	DOWN	2	2	2	2
428163	50	DOWN	2	3	2	3
428184	16.66666667	DOWN	5	1	5	1
428309	33.33333333	DOWN	2	2	2	2
428338	33.33333333	DOWN	2	2	2	2
428412	16.66666667	UP	3	1	3	1
428592	33.33333333	DOWN	3	2	2	4
429086	33.33333333	UP	2	2	2	2
429299	33.33333333	DOWN	2	2	2	2
429349	16.66666667	DOWN	3	1	3	1
429434	33.33333333	DOWN	5	2	2	5
429678	16.66666667	UP	3	1	3	1
430092	33.33333333	UP	2	2	2	2
430231	33.33333333	DOWN	3	2	2	6
430233	33.33333333	DOWN	3	2	2	4
430318	33.33333333	DOWN	2	2	2	2
430368	33.33333333	UP	2	2	2	2
430709	16.66666667	UP	3	1	3	1
430968	16.66666667	UP	5	1	5	1
431397	50	UP	2	3	2	3
431655	16.66666667	UP	3	1	2	3
431944	66.66666667	UP	2	4	2	4
432072	16.66666667	UP	3	1	2	2
432194	16.66666667	DOWN	3	1	3	1
432564	16.66666667	DOWN	10	1	2	5
433078	33.33333333	DOWN	2	2	2	2
433487	16.66666667	DOWN	3	1	2	2
433522	16.66666667	UP	3	1	3	1
433567	16.66666667	UP	3	1	3	1
434768	16.66666667	UP	3	1	3	1
434776	16.66666667	UP	3	1	2	3
434826	16.66666667	DOWN	5	1	5	1
435036	16.66666667	UP	3	1	2	2
435149	16.66666667	DOWN	3	1	3	1
435470	33.33333333	DOWN	3	2	3	2
435481	33.33333333	UP	3	2	3	2
435551	16.66666667	UP	3	1	3	1
435730	33.33333333	UP	3	2	2	3
435855	33.33333333	UP	3	2	2	3
435890	16.66666667	UP	25	1	25	1
435984	16.66666667	UP	3	1	3	1
436062	33.33333333	UP	2	2	2	2
436094	16.66666667	DOWN	3	1	2	3
436121	33.33333333	DOWN	3	2	2	5
436388	16.66666667	UP	5	1	5	1
436741	16.66666667	DOWN	3	1	3	1
447208	16.66666667	UP	3	1	3	1

Table 10

447416	33.33333333	DOWN	2	2	2	2
447715	33.33333333	DOWN	2	2	2	2
448036	16.66666667	UP	3	1	3	1
448046	50	UP	2	3	2	3
448068	33.33333333	UP	2	2	2	2
448190	50	DOWN	2	3	2	3
448383	50	DOWN	2	3	2	3
448490	33.33333333	DOWN	2	2	2	2
448514	16.66666667	DOWN	3	1	3	1
448556	16.66666667	UP	3	1	2	3
448619	16.66666667	DOWN	3	1	2	3
448628	16.66666667	UP	3	1	2	2
449187	50	DOWN	2	3	2	3
449275	16.66666667	UP	3	1	3	1
449309	66.66666667	UP	2	4	2	4
450060	33.33333333	DOWN	2	2	2	2
450227	16.66666667	UP	3	1	3	1
450322	50	UP	2	3	2	3
450398	16.66666667	DOWN	5	1	2	2
450453	16.66666667	UP	3	1	3	1
450802	16.66666667	UP	3	1	3	1
450962	16.66666667	DOWN	3	1	2	5
450974	83.33333333	DOWN	2	5	2	5
451161	33.33333333	DOWN	2	2	2	2
451587	16.66666667	DOWN	3	1	2	2
451707	33.33333333	DOWN	3	2	3	2
452016	16.66666667	DOWN	5	1	2	3
452068	16.66666667	UP	3	1	3	1
452333	33.33333333	UP	2	2	2	2
452374	33.33333333	DOWN	5	2	3	4
452395	33.33333333	DOWN	2	2	2	2
453107	33.33333333	DOWN	2	2	2	2
453175	16.66666667	DOWN	3	1	2	4
453710	16.66666667	UP	5	1	5	1
453722	16.66666667	UP	5	1	5	1
454232	33.33333333	UP	2	2	2	2
454317	16.66666667	DOWN	3	1	2	2
454672	16.66666667	DOWN	5	1	2	2
454771	33.33333333	UP	5	2	5	2
454822	66.66666667	DOWN	10	4	5	6
454908	16.66666667	UP	3	1	2	3
454918	33.33333333	DOWN	2	2	2	2
454953	16.66666667	DOWN	5	1	2	5
454970	16.66666667	UP	3	1	2	2
455204	16.66666667	UP	3	1	3	1
455271	16.66666667	DOWN	3	1	2	4
460002	16.66666667	DOWN	5	1	2	5
460039	16.66666667	DOWN	5	1	2	5
460114	16.66666667	DOWN	3	1	2	3

Table 10

460189	50	DOWN	2	3	2	3
460258	16.66666667	DOWN	5	1	2	3
460279	16.66666667	DOWN	3	1	3	1
460398	16.66666667	UP	5	1	2	4
460403	16.66666667	DOWN	3	1	2	4
460420	33.33333333	UP	3	2	3	2
460435	16.66666667	DOWN	3	1	3	1
460487	16.66666667	DOWN	50	1	2	6
460806	16.66666667	UP	3	1	3	1
461284	33.33333333	UP	5	2	5	2
461307	16.66666667	DOWN	5	1	2	5
461354	33.33333333	DOWN	2	2	2	2
461425	33.33333333	DOWN	2	2	2	2
461499	16.66666667	DOWN	3	1	3	1
461592	50	DOWN	3	3	2	4
461759	33.33333333	UP	3	2	2	5
461761	33.33333333	DOWN	3	2	3	2
461864	16.66666667	UP	3	1	3	1
461988	16.66666667	UP	3	1	2	2
462003	83.33333333	DOWN	2	5	2	5
462007	33.33333333	DOWN	3	2	3	2
462113	33.33333333	DOWN	2	2	2	2
462146	33.33333333	DOWN	2	2	2	2
462237	16.66666667	DOWN	3	1	2	2
462325	50	UP	2	3	2	3
462412	16.66666667	UP	3	1	2	3
462729	33.33333333	UP	2	2	2	2
462953	16.66666667	UP	5	1	2	2
470001	16.66666667	DOWN	3	1	2	2
470049	50	DOWN	2	3	2	3
470061	16.66666667	DOWN	5	1	5	1
470122	16.66666667	DOWN	3	1	3	1
470148	33.33333333	UP	3	2	2	4
470187	50	UP	2	3	2	3
470227	16.66666667	DOWN	3	1	3	1
470379	33.33333333	DOWN	5	2	2	5
470393	33.33333333	DOWN	2	2	2	2
471266	50	DOWN	2	3	2	3
471568	16.66666667	UP	3	1	3	1
471642	33.33333333	DOWN	2	2	2	2
471664	16.66666667	UP	3	1	3	1
485989	33.33333333	UP	2	2	2	2
486175	50	DOWN	2	3	2	3
486436	16.66666667	DOWN	3	1	3	1
486623	16.66666667	DOWN	5	1	5	1
486697	16.66666667	UP	3	1	3	1
486710	33.33333333	UP	3	2	2	3
487152	33.33333333	DOWN	2	2	2	2
487297	33.33333333	DOWN	3	2	2	3

Table 10

487499	33.33333333	DOWN	2	2	2	2
487820	16.66666667	DOWN	3	1	2	2
487824	33.33333333	DOWN	2	2	2	2
487928	33.33333333	UP	3	2	2	4
487929	16.66666667	DOWN	3	1	2	3
488115	33.33333333	DOWN	2	2	2	2
488140	16.66666667	UP	5	1	5	1
488145	33.33333333	UP	2	2	2	2
488207	16.66666667	UP	3	1	3	1
488431	50	DOWN	2	3	2	3
488651	50	DOWN	2	3	2	3
488913	16.66666667	DOWN	3	1	2	2
488964	50	DOWN	2	3	2	3
489079	16.66666667	UP	3	1	2	2
489373	16.66666667	DOWN	3	1	2	2
489519	16.66666667	UP	3	1	2	3
489600	16.66666667	DOWN	3	1	2	4
489631	50	UP	2	3	2	3
489664	16.66666667	DOWN	3	1	2	4
489755	16.66666667	UP	3	1	2	2
489798	16.66666667	UP	3	1	3	1
489800	50	DOWN	2	3	2	3
490232	16.66666667	DOWN	3	1	3	1
490329	50	UP	3	3	2	5
490536	33.33333333	DOWN	2	2	2	2
490649	16.66666667	UP	3	1	3	1
490696	33.33333333	DOWN	2	2	2	2
490779	16.66666667	UP	3	1	3	1
490819	16.66666667	UP	3	1	2	2
490925	16.66666667	DOWN	3	1	3	1
490946	16.66666667	UP	3	1	3	1
490971	50	UP	2	3	2	3
490995	50	UP	2	3	2	3
491113	33.33333333	UP	2	2	2	2
491298	16.66666667	DOWN	3	1	3	1
491311	16.66666667	UP	3	1	2	2
491405	33.33333333	DOWN	2	2	2	2
491435	16.66666667	DOWN	3	1	3	1
491706	33.33333333	DOWN	2	2	2	2
501868	16.66666667	DOWN	3	1	2	3
501981	50	DOWN	5	3	2	6
501989	33.33333333	UP	2	2	2	2
502164	16.66666667	DOWN	3	1	2	2
502173	16.66666667	DOWN	3	1	3	1
502198	50	DOWN	2	3	2	3
502215	33.33333333	DOWN	2	2	2	2
502286	16.66666667	UP	3	1	3	1
502287	16.66666667	DOWN	3	1	3	1
502367	33.33333333	UP	2	2	2	2

Table 10

502527	16.66666667	UP	5	1	5	1
502536	50	UP	2	3	2	3
502682	33.33333333	UP	2	2	2	2
502690	16.66666667	DOWN	3	1	3	1
503214	50	DOWN	2	3	2	3
503579	33.33333333	UP	10	2	3	5
503581	16.66666667	DOWN	3	1	2	2
503617	16.66666667	UP	5	1	2	2
504111	33.33333333	DOWN	2	2	2	2
504226	16.66666667	UP	3	1	3	1
504308	16.66666667	UP	3	1	3	1
504461	16.66666667	UP	3	1	2	3
504555	33.33333333	DOWN	3	2	3	2
504596	33.33333333	UP	3	2	2	4
504791	33.33333333	DOWN	2	2	2	2
504927	16.66666667	UP	3	1	3	1
504959	16.66666667	DOWN	25	1	5	3
505032	16.66666667	UP	3	1	3	1
505225	16.66666667	DOWN	3	1	2	4
505227	16.66666667	UP	5	1	5	1
505576	50	UP	2	3	2	3
505579	33.33333333	DOWN	2	2	2	2
506128	16.66666667	DOWN	3	1	3	1
506564	16.66666667	DOWN	3	1	2	3
509462	16.66666667	UP	3	1	3	1
509564	33.33333333	UP	2	2	2	2
509688	16.66666667	DOWN	5	1	2	3
509731	66.66666667	DOWN	2	4	2	4
509800	33.33333333	UP	2	2	2	2
509823	33.33333333	DOWN	10	2	5	3
510576	33.33333333	DOWN	3	2	2	5
511060	16.66666667	DOWN	3	1	3	1
511428	33.33333333	DOWN	3	2	2	5
512116	16.66666667	DOWN	5	1	5	1
529185	16.66666667	DOWN	3	1	2	4
530139	16.66666667	UP	3	1	3	1
530359	16.66666667	UP	3	1	2	3
530526	16.66666667	UP	3	1	2	2
530814	16.66666667	DOWN	3	1	2	5
549728	33.33333333	DOWN	2	2	2	2
549933	16.66666667	UP	5	1	5	1
561916	16.66666667	DOWN	3	1	2	2
562158	16.66666667	DOWN	3	1	3	1
562447	33.33333333	UP	2	2	2	2
562729	16.66666667	UP	50	1	50	1
563598	50	DOWN	3	3	2	4
564517	16.66666667	DOWN	5	1	5	1
564549	16.66666667	UP	3	1	3	1
564621	16.66666667	DOWN	3	1	2	2

Table 10

564801	33.33333333	DOWN	2	2	2	2
565779	16.66666667	UP	5	1	3	3
565863	16.66666667	DOWN	5	1	5	1
566106	33.33333333	DOWN	2	2	2	2
566250	16.66666667	DOWN	3	1	3	1
566383	66.66666667	DOWN	3	4	3	4
566595	16.66666667	DOWN	3	1	3	1
567265	33.33333333	DOWN	2	2	2	2
586685	16.66666667	UP	3	1	3	1
586706	50	DOWN	3	3	3	3
586725	33.33333333	DOWN	2	2	2	2
586780	16.66666667	DOWN	3	1	3	1
586820	16.66666667	DOWN	3	1	3	1
586845	16.66666667	DOWN	3	1	3	1
587268	16.66666667	DOWN	3	1	3	1
587415	16.66666667	DOWN	10	1	10	1
587595	16.66666667	UP	3	1	2	2
587847	16.66666667	DOWN	5	1	2	2
588053	16.66666667	DOWN	3	1	3	1
588915	33.33333333	DOWN	5	2	3	3
588960	16.66666667	DOWN	3	1	3	1
589115	16.66666667	UP	25	1	25	1
589276	16.66666667	DOWN	3	1	3	1
590264	16.66666667	DOWN	25	1	3	4
590338	33.33333333	DOWN	2	2	2	2
591465	33.33333333	UP	2	2	2	2
592243	66.66666667	DOWN	10	4	5	6
592540	16.66666667	DOWN	3	1	3	1
592594	33.33333333	DOWN	2	2	2	2
593026	16.66666667	UP	5	1	5	1
593114	16.66666667	DOWN	3	1	3	1
593280	16.66666667	DOWN	3	1	3	1
593431	50	UP	2	3	2	3
593815	50	UP	2	3	2	3
594079	16.66666667	DOWN	3	1	3	1
594322	33.33333333	DOWN	2	2	2	2
594600	16.66666667	UP	3	1	2	2
594633	16.66666667	DOWN	5	1	5	1
594683	16.66666667	DOWN	3	1	3	1
594684	16.66666667	DOWN	5	1	5	1
594806	16.66666667	DOWN	3	1	3	1
595037	33.33333333	DOWN	2	2	2	2
595090	50	UP	2	3	2	3
595109	16.66666667	DOWN	3	1	3	1
609043	33.33333333	UP	5	2	2	4
609047	16.66666667	DOWN	3	1	3	1
609155	33.33333333	DOWN	2	2	2	2
609436	16.66666667	DOWN	3	1	3	1
610012	16.66666667	DOWN	3	1	3	1

Table 10

610883	33.33333333	DOWN	2	2	2	2
611150	33.33333333	DOWN	2	2	2	2
611452	16.66666667	DOWN	3	1	3	1
611510	16.66666667	DOWN	3	1	3	1
624360	16.66666667	DOWN	3	1	2	3
624372	16.66666667	UP	3	1	3	1
624577	33.33333333	DOWN	3	2	2	4
624627	16.66666667	UP	3	1	3	1
624991	33.33333333	UP	2	2	2	2
625616	16.66666667	DOWN	5	1	3	4
626001	33.33333333	UP	2	2	2	2
626385	16.66666667	DOWN	3	1	3	1
626462	16.66666667	DOWN	5	1	5	1
626487	16.66666667	DOWN	3	1	2	2
626555	16.66666667	DOWN	3	1	3	1
626842	16.66666667	DOWN	3	1	3	1
627002	33.33333333	DOWN	2	2	2	2
627039	50	UP	3	3	3	3
627288	16.66666667	DOWN	3	1	3	1
627306	33.33333333	DOWN	3	2	2	5
627351	16.66666667	UP	3	1	3	1
627542	16.66666667	DOWN	3	1	2	2
628418	33.33333333	DOWN	2	2	2	2
628602	16.66666667	DOWN	3	1	3	1
629498	16.66666667	DOWN	3	1	3	1
629906	16.66666667	UP	3	1	2	2
629944	33.33333333	DOWN	2	2	2	2
629945	16.66666667	DOWN	3	1	3	1
645161	33.33333333	DOWN	3	2	2	4
645461	16.66666667	DOWN	3	1	3	1
646035	16.66666667	DOWN	3	1	3	1
646556	16.66666667	DOWN	3	1	3	1
646753	16.66666667	DOWN	3	1	3	1
647397	16.66666667	DOWN	5	1	3	2
665127	16.66666667	DOWN	3	1	3	1
665144	33.33333333	DOWN	2	2	2	2
665148	16.66666667	DOWN	3	1	2	2
665542	16.66666667	UP	3	1	2	2
665674	33.33333333	DOWN	2	2	2	2
665738	33.33333333	DOWN	2	2	2	2
666029	16.66666667	DOWN	3	1	3	1
666451	33.33333333	DOWN	5	2	5	2
666879	33.33333333	DOWN	3	2	2	6
667883	50	UP	2	3	2	3
669359	16.66666667	DOWN	5	1	2	3
669435	33.33333333	UP	2	2	2	2
681948	33.33333333	DOWN	2	2	2	2
682066	33.33333333	UP	2	2	2	2
682479	33.33333333	DOWN	2	2	2	2

Table 10

683151	33.33333333	DOWN	2	2	2	2
683276	16.66666667	DOWN	5	1	2	6
684879	33.33333333	DOWN	5	2	2	6
685516	33.33333333	DOWN	2	2	2	2
687551	33.33333333	DOWN	2	2	2	2
687579	16.66666667	UP	3	1	2	2
700527	16.66666667	DOWN	3	1	2	2
700668	33.33333333	DOWN	5	2	3	4
700677	16.66666667	DOWN	3	1	2	2
701123	50	DOWN	2	3	2	3
701256	83.33333333	DOWN	5	5	5	5
701711	50	DOWN	2	3	2	3
701751	33.33333333	UP	3	2	2	4
703384	33.33333333	DOWN	2	2	2	2
703581	16.66666667	UP	3	1	3	1
703637	33.33333333	UP	2	2	2	2
703732	50	DOWN	2	3	2	3
703774	33.33333333	DOWN	2	2	2	2
703916	16.66666667	DOWN	3	1	2	4
704023	16.66666667	UP	100	1	100	1
704076	16.66666667	DOWN	3	1	3	1
704459	16.66666667	UP	3	1	2	2
711918	50	UP	2	3	2	3
712292	16.66666667	UP	3	1	3	1
712499	33.33333333	DOWN	2	2	2	2
712604	16.66666667	UP	5	1	5	1
712884	16.66666667	DOWN	3	1	2	3
712950	33.33333333	DOWN	2	2	2	2
713109	33.33333333	DOWN	2	2	2	2
713129	16.66666667	UP	5	1	2	2
713271	33.33333333	DOWN	2	2	2	2
713660	33.33333333	DOWN	2	2	2	2
713685	83.33333333	DOWN	5	5	3	6
713922	16.66666667	DOWN	10	1	2	6
714106	16.66666667	UP	3	1	2	3
724888	33.33333333	UP	5	2	3	3
724893	16.66666667	UP	3	1	3	1
724895	16.66666667	DOWN	3	1	3	1
725143	16.66666667	UP	3	1	3	1
725321	16.66666667	DOWN	10	1	2	3
725395	16.66666667	DOWN	3	1	2	2
725533	16.66666667	DOWN	3	1	3	1
725680	16.66666667	DOWN	3	1	3	1
725707	33.33333333	UP	3	2	3	2
726483	16.66666667	DOWN	3	1	2	3
726645	83.33333333	DOWN	25	5	2	6
726658	16.66666667	DOWN	3	1	2	2
726681	16.66666667	UP	3	1	3	1
726726	33.33333333	UP	3	2	2	4

Table 10

726860	16.66666667	UP	3	1	3	1
729964	16.66666667	UP	3	1	2	2
730126	33.33333333	UP	2	2	2	2
730737	16.66666667	DOWN	3	1	3	1
730739	50	DOWN	2	3	2	3
730871	33.33333333	UP	3	2	2	4
730946	16.66666667	DOWN	5	1	5	1
730971	16.66666667	UP	10	1	10	1
731029	33.33333333	DOWN	2	2	2	2
731180	50	DOWN	3	3	2	4
731198	33.33333333	DOWN	3	2	2	4
731236	33.33333333	DOWN	2	2	2	2
731240	16.66666667	DOWN	5	1	3	2
731255	16.66666667	DOWN	3	1	2	2
731290	50	DOWN	2	3	2	3
731404	16.66666667	DOWN	3	1	3	1
731426	33.33333333	DOWN	3	2	2	6
731469	33.33333333	DOWN	2	2	2	2
738912	33.33333333	DOWN	2	2	2	2
738970	33.33333333	DOWN	2	2	2	2
739123	16.66666667	UP	3	1	2	3
739191	33.33333333	UP	2	2	2	2
739193	16.66666667	DOWN	3	1	3	1
739450	33.33333333	DOWN	2	2	2	2
740780	50	DOWN	2	3	2	3
740941	33.33333333	DOWN	3	2	3	2
741067	33.33333333	UP	3	2	2	4
741139	16.66666667	UP	5	1	2	2
741474	33.33333333	DOWN	3	2	2	3
741497	50	DOWN	2	3	2	3
741880	50	DOWN	2	3	2	3
741977	16.66666667	DOWN	5	1	2	5
742125	50	UP	2	3	2	3
742132	33.33333333	DOWN	5	2	2	5
742596	33.33333333	DOWN	5	2	2	5
742672	16.66666667	DOWN	3	1	3	1
742679	50	DOWN	2	3	2	3
742763	16.66666667	UP	3	1	3	1
742818	16.66666667	UP	3	1	3	1
742977	50	DOWN	3	3	2	4
743081	16.66666667	DOWN	3	1	3	1
743150	16.66666667	DOWN	3	1	2	4
743161	16.66666667	DOWN	3	1	3	1
743230	16.66666667	DOWN	3	1	3	1
743309	16.66666667	UP	3	1	3	1
743412	16.66666667	DOWN	5	1	5	1
743416	16.66666667	DOWN	3	1	3	1
743452	16.66666667	DOWN	5	1	5	1
743465	16.66666667	DOWN	3	1	3	1

Table 10

743574	16.66666667	DOWN	5	1	5	1
743688	33.33333333	UP	2	2	2	2
743699	33.33333333	DOWN	2	2	2	2
743731	16.66666667	UP	3	1	3	1
743868	16.66666667	DOWN	3	1	2	4
744367	33.33333333	DOWN	5	2	2	5
744385	16.66666667	DOWN	5	1	5	1
744395	50	DOWN	2	3	2	3
744565	16.66666667	DOWN	3	1	3	1
744647	16.66666667	DOWN	3	1	3	1
744918	16.66666667	UP	5	1	5	1
745001	16.66666667	UP	5	1	5	1
745011	16.66666667	DOWN	3	1	3	1
745019	16.66666667	UP	3	1	2	2
745097	16.66666667	UP	3	1	3	1
745121	16.66666667	DOWN	3	1	2	2
745136	33.33333333	UP	3	2	2	4
745190	16.66666667	UP	3	1	3	1
745503	33.33333333	DOWN	2	2	2	2
745542	33.33333333	DOWN	2	2	2	2
745556	33.33333333	DOWN	5	2	3	3
745572	50	UP	3	3	2	4
745596	16.66666667	UP	3	1	3	1
746020	33.33333333	DOWN	2	2	2	2
746163	50	DOWN	2	3	2	3
746217	16.66666667	DOWN	3	1	2	2
746347	16.66666667	DOWN	3	1	3	1
752625	16.66666667	DOWN	10	1	3	2
752640	16.66666667	DOWN	3	1	3	1
752732	16.66666667	UP	3	1	3	1
752802	50	DOWN	3	3	2	4
753028	50	UP	2	3	2	3
753076	16.66666667	UP	10	1	2	3
753104	16.66666667	DOWN	3	1	3	1
753184	16.66666667	DOWN	3	1	2	3
753211	33.33333333	UP	2	2	2	2
753213	16.66666667	DOWN	3	1	3	1
753252	16.66666667	DOWN	3	1	3	1
753378	16.66666667	UP	3	1	3	1
753381	33.33333333	UP	2	2	2	2
753411	33.33333333	UP	2	2	2	2
753428	33.33333333	UP	3	2	2	4
753467	16.66666667	UP	3	1	3	1
753587	33.33333333	DOWN	2	2	2	2
753625	50	DOWN	2	3	2	3
753743	16.66666667	DOWN	3	1	3	1
753770	16.66666667	UP	5	1	5	1
753775	50	DOWN	3	3	2	4
753794	50	DOWN	10	3	3	6

Table 10

753897	16.66666667	DOWN	3	1	2	2
753909	33.33333333	DOWN	5	2	2	5
753914	33.33333333	DOWN	2	2	2	2
753973	33.33333333	DOWN	2	2	2	2
754033	33.33333333	DOWN	2	2	2	2
754046	100	DOWN	2	6	2	6
754126	16.66666667	UP	5	1	3	4
754255	33.33333333	DOWN	2	2	2	2
754334	16.66666667	UP	5	1	5	1
754358	16.66666667	UP	3	1	2	3
754378	16.66666667	UP	5	1	3	2
754436	33.33333333	DOWN	2	2	2	2
754449	16.66666667	DOWN	3	1	2	2
754479	50	DOWN	2	3	2	3
754517	16.66666667	UP	3	1	3	1
754525	33.33333333	UP	2	2	2	2
754559	33.33333333	DOWN	2	2	2	2
754582	33.33333333	UP	2	2	2	2
755299	33.33333333	DOWN	2	2	2	2
755409	16.66666667	DOWN	3	1	2	2
755517	33.33333333	UP	2	2	2	2
755578	33.33333333	DOWN	2	2	2	2
755599	33.33333333	DOWN	2	2	2	2
755663	33.33333333	DOWN	2	2	2	2
755751	16.66666667	DOWN	3	1	2	3
755765	50	DOWN	2	3	2	3
756372	16.66666667	DOWN	3	1	2	2
756373	50	UP	2	3	2	3
756595	16.66666667	UP	10	1	10	1
756596	16.66666667	DOWN	5	1	5	1
757143	33.33333333	UP	2	2	2	2
757151	16.66666667	DOWN	5	1	5	1
757197	16.66666667	UP	5	1	5	1
757222	33.33333333	DOWN	2	2	2	2
757435	50	DOWN	10	3	5	5
757873	16.66666667	DOWN	3	1	3	1
758148	50	DOWN	2	3	2	3
758266	16.66666667	UP	5	1	5	1
758280	33.33333333	DOWN	2	2	2	2
758347	16.66666667	DOWN	3	1	2	3
759163	16.66666667	DOWN	3	1	2	3
759173	33.33333333	DOWN	2	2	2	2
759865	66.66666667	DOWN	3	4	2	6
759873	16.66666667	UP	3	1	2	3
759948	16.66666667	DOWN	3	1	2	3
760224	16.66666667	DOWN	3	1	3	1
767075	33.33333333	UP	2	2	2	2
767164	33.33333333	DOWN	2	2	2	2
767172	16.66666667	DOWN	3	1	2	2

Table 10

767176	16.66666667	UP	3	1	3	1
767188	66.66666667	DOWN	2	4	2	4
767313	16.66666667	DOWN	3	1	2	3
767345	33.33333333	DOWN	2	2	2	2
767495	33.33333333	UP	2	2	2	2
767706	33.33333333	DOWN	3	2	3	2
767775	16.66666667	UP	5	1	5	1
767851	16.66666667	DOWN	3	1	3	1
767985	33.33333333	DOWN	2	2	2	2
767988	16.66666667	DOWN	3	1	2	2
767991	33.33333333	DOWN	3	2	2	6
768059	16.66666667	DOWN	3	1	2	2
768111	33.33333333	UP	2	2	2	2
768299	50	UP	2	3	2	3
768316	66.66666667	UP	2	4	2	4
768432	33.33333333	UP	2	2	2	2
768443	16.66666667	DOWN	5	1	5	1
768497	16.66666667	UP	3	1	3	1
768561	16.66666667	UP	3	1	2	2
768570	16.66666667	DOWN	3	1	2	3
769579	16.66666667	DOWN	3	1	2	2
769603	16.66666667	UP	3	1	2	2
769686	16.66666667	UP	3	1	2	2
769751	16.66666667	UP	3	1	3	1
769890	16.66666667	UP	3	1	2	2
770014	16.66666667	UP	5	1	5	1
770059	33.33333333	UP	2	2	2	2
770066	16.66666667	DOWN	3	1	2	4
770319	66.66666667	DOWN	3	4	2	5
770344	50	DOWN	2	3	2	3
770579	66.66666667	DOWN	2	4	2	4
770588	16.66666667	UP	3	1	3	1
770670	16.66666667	UP	5	1	5	1
770766	16.66666667	DOWN	5	1	5	1
770801	33.33333333	DOWN	2	2	2	2
770868	16.66666667	DOWN	3	1	2	4
770910	16.66666667	UP	3	1	3	1
771053	16.66666667	DOWN	3	1	3	1
771308	33.33333333	UP	2	2	2	2
772425	16.66666667	UP	3	1	2	3
772880	33.33333333	UP	2	2	2	2
772890	66.66666667	DOWN	2	4	2	4
772913	33.33333333	UP	2	2	2	2
772944	50	UP	2	3	2	3
772952	16.66666667	DOWN	3	1	2	3
773106	16.66666667	DOWN	3	1	3	1
773142	16.66666667	UP	3	1	2	2
773152	16.66666667	UP	3	1	3	1
773203	16.66666667	DOWN	3	1	3	1

Table 10

773204	33.33333333	DOWN	2	2	2	2
773290	16.66666667	UP	3	1	3	1
773293	16.66666667	DOWN	3	1	2	2
773301	33.33333333	DOWN	2	2	2	2
773304	33.33333333	DOWN	2	2	2	2
773330	33.33333333	UP	2	2	2	2
773331	16.66666667	DOWN	3	1	2	2
773373	33.33333333	DOWN	2	2	2	2
773392	16.66666667	UP	3	1	2	2
773422	33.33333333	DOWN	2	2	2	2
773495	50	UP	3	3	2	4
773558	33.33333333	UP	2	2	2	2
773573	16.66666667	UP	3	1	2	4
773575	33.33333333	DOWN	2	2	2	2
773605	16.66666667	UP	3	1	3	1
780958	16.66666667	UP	3	1	3	1
781047	33.33333333	DOWN	2	2	2	2
781088	16.66666667	DOWN	5	1	5	1
781089	33.33333333	DOWN	2	2	2	2
781139	16.66666667	UP	3	1	2	2
781339	16.66666667	UP	10	1	10	1
781366	16.66666667	DOWN	3	1	3	1
781401	66.66666667	DOWN	2	4	2	4
781467	16.66666667	UP	5	1	5	1
781505	33.33333333	DOWN	2	2	2	2
782209	16.66666667	DOWN	3	1	3	1
782217	33.33333333	DOWN	3	2	3	2
782259	16.66666667	UP	3	1	3	1
782306	16.66666667	DOWN	5	1	2	4
782406	33.33333333	UP	2	2	2	2
782429	50	DOWN	2	3	2	3
782503	16.66666667	UP	3	1	3	1
782513	66.66666667	DOWN	3	3	2	4
782537	16.66666667	DOWN	10	1	3	6
782547	33.33333333	DOWN	2	2	2	2
782575	16.66666667	UP	3	1	3	1
782701	33.33333333	UP	2	2	2	2
782835	33.33333333	UP	2	2	2	2
783696	33.33333333	DOWN	2	2	2	2
783729	16.66666667	UP	10	1	10	1
784065	16.66666667	DOWN	3	1	2	3
784129	33.33333333	UP	2	2	2	2
784143	16.66666667	DOWN	3	1	3	1
784168	33.33333333	UP	2	2	2	2
784178	16.66666667	UP	3	1	3	1
784179	16.66666667	DOWN	3	1	2	2
784212	33.33333333	DOWN	3	2	2	3
784276	50	DOWN	2	3	2	3
784285	33.33333333	DOWN	2	2	2	2

Table 10

784296	33.33333333	DOWN	2	2	2	2
785293	16.66666667	DOWN	3	1	3	1
785342	16.66666667	DOWN	3	1	2	3
785368	33.33333333	DOWN	3	2	2	3
785693	16.66666667	DOWN	3	1	2	3
785694	16.66666667	DOWN	3	1	3	1
785695	16.66666667	UP	3	1	3	1
785701	16.66666667	UP	3	1	2	2
785703	16.66666667	UP	3	1	2	2
785707	16.66666667	UP	3	1	2	2
785745	33.33333333	DOWN	2	2	2	2
785766	33.33333333	DOWN	2	2	2	2
785788	33.33333333	DOWN	2	2	2	2
785795	33.33333333	DOWN	3	2	3	2
785847	16.66666667	UP	3	1	3	1
785866	16.66666667	DOWN	3	1	2	4
785910	16.66666667	DOWN	10	1	2	3
785913	33.33333333	DOWN	3	2	2	3
785983	33.33333333	DOWN	2	2	2	2
786067	16.66666667	UP	5	1	5	1
786602	33.33333333	DOWN	2	2	2	2
786607	33.33333333	DOWN	2	2	2	2
786609	33.33333333	UP	3	2	2	3
786675	33.33333333	DOWN	10	2	2	4
787893	16.66666667	DOWN	3	1	3	1
788136	33.33333333	DOWN	2	2	2	2
788541	16.66666667	DOWN	10	1	2	3
788554	33.33333333	DOWN	2	2	2	2
788609	16.66666667	UP	3	1	3	1
788629	33.33333333	UP	2	2	2	2
788745	16.66666667	UP	3	1	3	1
788832	16.66666667	UP	3	1	3	1
789012	33.33333333	UP	2	2	2	2
789069	16.66666667	UP	3	1	2	2
789147	16.66666667	UP	3	1	3	1
789376	33.33333333	DOWN	3	2	2	4
789383	16.66666667	UP	3	1	3	1
795202	16.66666667	DOWN	10	1	2	4
795208	16.66666667	DOWN	5	1	2	3
795213	33.33333333	DOWN	2	2	2	2
795253	16.66666667	UP	3	1	3	1
795254	16.66666667	DOWN	5	1	5	1
795262	33.33333333	DOWN	3	2	2	3
795263	16.66666667	DOWN	3	1	2	2
795265	16.66666667	UP	3	1	2	3
795284	50	DOWN	3	3	2	5
795307	33.33333333	DOWN	2	2	2	2
795322	16.66666667	DOWN	3	1	2	2
795379	33.33333333	DOWN	3	2	3	2

Table 10

795401	33.33333333	DOWN	2	2	2	2
795424	33.33333333	DOWN	2	2	2	2
795588	16.66666667	DOWN	5	1	5	1
795729	33.33333333	DOWN	3	2	2	4
795754	33.33333333	UP	2	2	2	2
795832	33.33333333	DOWN	2	2	2	2
795907	50	DOWN	5	3	3	4
796079	16.66666667	UP	5	1	2	2
796170	33.33333333	DOWN	2	2	2	2
796255	33.33333333	DOWN	2	2	2	2
796266	16.66666667	DOWN	5	1	3	2
796398	16.66666667	DOWN	3	1	2	4
796496	16.66666667	DOWN	3	1	3	1
796519	16.66666667	DOWN	3	1	2	4
796613	16.66666667	UP	3	1	2	3
796646	16.66666667	UP	3	1	3	1
796689	16.66666667	UP	3	1	3	1
796694	50	DOWN	2	3	2	3
796711	50	UP	3	3	2	4
796718	66.66666667	DOWN	2	4	2	4
796732	33.33333333	UP	2	2	2	2
796759	16.66666667	UP	3	1	3	1
796968	16.66666667	DOWN	3	1	3	1
796994	16.66666667	DOWN	3	1	3	1
809357	16.66666667	DOWN	5	1	2	2
809374	16.66666667	UP	3	1	3	1
809406	16.66666667	UP	3	1	2	2
809588	33.33333333	UP	2	2	2	2
809598	33.33333333	UP	3	2	2	4
809685	33.33333333	DOWN	2	2	2	2
809694	16.66666667	UP	3	1	3	1
809720	16.66666667	UP	3	1	3	1
809894	33.33333333	DOWN	2	2	2	2
810002	16.66666667	UP	3	1	3	1
810038	33.33333333	DOWN	2	2	2	2
810062	16.66666667	UP	3	1	3	1
810109	16.66666667	DOWN	3	1	2	2
810142	33.33333333	DOWN	2	2	2	2
810221	16.66666667	DOWN	3	1	2	2
810224	16.66666667	UP	3	1	2	3
810235	16.66666667	DOWN	5	1	2	5
810272	33.33333333	DOWN	2	2	2	2
810331	16.66666667	DOWN	3	1	2	4
810367	16.66666667	UP	5	1	2	2
810372	16.66666667	UP	3	1	3	1
810444	50	UP	2	3	2	3
810454	50	DOWN	2	3	2	3
810512	33.33333333	DOWN	2	2	2	2
810560	16.66666667	DOWN	3	1	2	2

Table 10

810711	33.33333333	UP	2	2	2	2
810727	33.33333333	DOWN	2	2	2	2
810753	16.66666667	DOWN	3	1	3	1
810773	16.66666667	DOWN	5	1	5	1
810787	16.66666667	UP	3	1	3	1
810813	16.66666667	DOWN	5	1	2	4
810846	33.33333333	DOWN	3	2	2	5
810927	50	DOWN	2	3	2	3
810983	16.66666667	DOWN	3	1	3	1
811000	16.66666667	DOWN	3	1	2	3
811024	33.33333333	DOWN	2	2	2	2
811028	16.66666667	UP	3	1	3	1
811035	33.33333333	DOWN	2	2	2	2
811048	16.66666667	UP	3	1	3	1
811064	33.33333333	DOWN	2	2	2	2
811108	33.33333333	DOWN	2	2	2	2
811149	16.66666667	UP	3	1	3	1
811162	16.66666667	DOWN	3	1	2	4
811581	50	DOWN	3	3	3	3
811582	16.66666667	DOWN	3	1	2	2
811627	33.33333333	DOWN	2	2	2	2
811740	33.33333333	DOWN	2	2	2	2
811911	33.33333333	DOWN	2	2	2	2
811954	50	DOWN	2	3	2	3
811976	16.66666667	UP	3	1	3	1
812041	16.66666667	DOWN	3	1	2	4
812074	16.66666667	UP	5	1	5	1
812105	16.66666667	DOWN	3	1	2	4
812217	33.33333333	DOWN	2	2	2	2
812227	16.66666667	UP	3	1	3	1
812277	16.66666667	UP	3	1	2	3
812954	16.66666667	UP	5	1	3	2
812955	16.66666667	UP	3	1	3	1
812967	33.33333333	DOWN	3	2	3	2
813149	33.33333333	DOWN	3	2	2	4
813187	33.33333333	DOWN	2	2	2	2
813242	16.66666667	UP	3	1	3	1
813249	33.33333333	DOWN	2	2	2	2
813265	33.33333333	DOWN	2	2	2	2
813276	33.33333333	DOWN	3	2	2	5
813408	50	DOWN	2	3	2	3
813414	16.66666667	UP	3	1	3	1
813513	33.33333333	UP	2	2	2	2
813560	16.66666667	DOWN	3	1	2	2
813586	16.66666667	DOWN	3	1	2	4
813604	16.66666667	DOWN	3	1	2	4
813616	33.33333333	DOWN	2	2	2	2
813631	33.33333333	DOWN	2	2	2	2
813707	16.66666667	UP	3	1	2	2

Table 10

813714	16.66666667	UP	5	1	3	2
813730	33.33333333	UP	2	2	2	2
813751	33.33333333	UP	2	2	2	2
813757	33.33333333	DOWN	3	2	2	4
813823	16.66666667	DOWN	5	1	5	1
813841	16.66666667	DOWN	5	1	2	3
813843	33.33333333	DOWN	2	2	2	2
814053	33.33333333	UP	2	2	2	2
814054	33.33333333	DOWN	2	2	2	2
814124	50	DOWN	2	3	2	3
814235	16.66666667	DOWN	3	1	3	1
814236	16.66666667	UP	10	1	10	1
814240	16.66666667	DOWN	3	1	3	1
814285	16.66666667	DOWN	3	1	3	1
814306	33.33333333	DOWN	2	2	2	2
814340	33.33333333	DOWN	3	2	2	3
814353	16.66666667	DOWN	3	1	2	2
814354	50	DOWN	2	3	2	3
814378	16.66666667	DOWN	3	1	2	2
814444	33.33333333	DOWN	2	2	2	2
814478	16.66666667	UP	3	1	3	1
814557	33.33333333	DOWN	2	2	2	2
814618	50	UP	2	3	2	3
814701	16.66666667	UP	3	1	2	2
814769	16.66666667	UP	3	1	3	1
814779	33.33333333	DOWN	2	2	2	2
814983	16.66666667	DOWN	3	1	2	2
815072	33.33333333	DOWN	2	2	2	2
815127	16.66666667	UP	5	1	2	3
815239	16.66666667	UP	3	1	3	1
815242	50	DOWN	2	3	2	3
815542	66.66666667	DOWN	3	4	2	5
815556	16.66666667	UP	3	1	3	1
815740	33.33333333	DOWN	3	2	2	3
815794	33.33333333	DOWN	3	2	2	6
815861	16.66666667	UP	10	1	10	1
823574	16.66666667	DOWN	3	1	2	2
823590	16.66666667	DOWN	5	1	2	4
823615	16.66666667	UP	3	1	3	1
823656	16.66666667	UP	3	1	2	2
823696	83.33333333	DOWN	3	5	3	5
823715	33.33333333	DOWN	2	2	2	2
823811	33.33333333	UP	2	2	2	2
823851	16.66666667	UP	3	1	2	3
823859	50	UP	3	3	3	3
823932	33.33333333	DOWN	2	2	2	2
824052	33.33333333	DOWN	2	2	2	2
824117	33.33333333	DOWN	2	2	2	2
824193	16.66666667	DOWN	3	1	3	1

Table 10

824237	16.66666667	DOWN	3	1	3	1
824340	16.66666667	DOWN	3	1	2	3
824358	33.33333333	UP	2	2	2	2
824377	16.66666667	DOWN	3	1	3	1
824421	16.66666667	UP	3	1	3	1
824527	16.66666667	UP	3	1	3	1
824933	16.66666667	DOWN	3	1	2	2
824995	16.66666667	DOWN	3	1	2	3
825058	33.33333333	DOWN	2	2	2	2
825366	16.66666667	UP	3	1	3	1
825577	16.66666667	UP	5	1	5	1
825603	33.33333333	DOWN	2	2	2	2
825654	16.66666667	DOWN	3	1	3	1
825697	16.66666667	DOWN	3	1	3	1
825719	33.33333333	DOWN	2	2	2	2
825742	33.33333333	DOWN	3	2	2	3
825857	16.66666667	DOWN	10	1	2	5
826109	16.66666667	DOWN	3	1	2	2
826130	33.33333333	DOWN	2	2	2	2
826459	50	DOWN	2	3	2	3
826995	16.66666667	UP	3	1	3	1
837953	33.33333333	DOWN	2	2	2	2
838366	16.66666667	DOWN	3	1	3	1
838446	16.66666667	UP	3	1	3	1
838600	33.33333333	DOWN	2	2	2	2
838611	16.66666667	DOWN	25	1	2	6
838761	16.66666667	DOWN	5	1	5	1
839081	16.66666667	UP	3	1	2	2
839092	16.66666667	DOWN	3	1	3	1
839580	16.66666667	UP	3	1	3	1
839641	16.66666667	DOWN	3	1	3	1
839736	50	DOWN	2	3	2	3
839936	16.66666667	DOWN	5	1	5	1
839991	50	UP	3	3	2	4
840024	16.66666667	DOWN	3	1	3	1
840266	16.66666667	UP	5	1	2	2
840384	50	UP	2	3	2	3
840444	16.66666667	DOWN	3	1	3	1
840466	16.66666667	DOWN	5	1	5	1
840576	16.66666667	DOWN	3	1	3	1
840590	16.66666667	DOWN	3	1	2	2
840654	16.66666667	DOWN	3	1	3	1
840677	33.33333333	DOWN	2	2	2	2
840683	16.66666667	DOWN	3	1	3	1
840687	33.33333333	DOWN	5	2	2	4
840702	16.66666667	DOWN	3	1	2	5
840726	16.66666667	UP	5	1	2	4
840818	16.66666667	DOWN	3	1	3	1
840821	66.66666667	DOWN	2	4	2	4

Table 10

840878	16.66666667	DOWN	3	1	3	1
840940	33.33333333	UP	2	2	2	2
840942	50	UP	2	3	2	3
840944	16.66666667	DOWN	5	1	2	3
840990	16.66666667	DOWN	5	1	2	6
841008	16.66666667	UP	3	1	3	1
841046	50	DOWN	2	3	2	3
841207	16.66666667	UP	3	1	3	1
841282	16.66666667	UP	3	1	2	2
841308	16.66666667	DOWN	5	1	2	6
841314	16.66666667	DOWN	3	1	2	2
841348	16.66666667	DOWN	3	1	3	1
841415	33.33333333	DOWN	2	2	2	2
841480	16.66666667	DOWN	3	1	3	1
841492	16.66666667	UP	3	1	3	1
841615	16.66666667	DOWN	3	1	2	3
841621	16.66666667	DOWN	10	1	2	2
841624	16.66666667	DOWN	3	1	2	4
841663	16.66666667	UP	3	1	3	1
841666	16.66666667	UP	3	1	3	1
842765	16.66666667	DOWN	3	1	2	4
842784	33.33333333	UP	2	2	2	2
842871	16.66666667	DOWN	3	1	2	2
842925	33.33333333	DOWN	2	2	2	2
843049	16.66666667	UP	3	1	3	1
843054	33.33333333	UP	2	2	2	2
843058	16.66666667	DOWN	3	1	3	1
843220	16.66666667	DOWN	3	1	3	1
843250	16.66666667	DOWN	3	1	3	1
843276	33.33333333	DOWN	2	2	2	2
843321	16.66666667	UP	3	1	3	1
844768	16.66666667	DOWN	5	1	5	1
844913	16.66666667	DOWN	3	1	3	1
845037	16.66666667	DOWN	5	1	5	1
845658	33.33333333	UP	2	2	2	2
845709	16.66666667	DOWN	3	1	3	1
845780	16.66666667	UP	3	1	3	1
852548	33.33333333	DOWN	2	2	2	2
852947	16.66666667	DOWN	3	1	3	1
853280	33.33333333	UP	2	2	2	2
853367	66.66666667	UP	2	4	2	4
853687	16.66666667	UP	5	1	5	1
853809	16.66666667	DOWN	3	1	3	1
853906	33.33333333	DOWN	2	2	2	2
853938	16.66666667	UP	3	1	2	3
853968	50	DOWN	2	3	2	3
853988	33.33333333	DOWN	2	2	2	2
853998	33.33333333	DOWN	2	2	2	2
854338	33.33333333	DOWN	3	2	2	4

Table 10

854444	33.33333333	UP	2	2	2	2
854581	16.66666667	DOWN	3	1	3	1
854746	50	DOWN	2	3	2	3
854831	16.66666667	DOWN	5	1	3	2
855133	16.66666667	DOWN	5	1	5	1
855157	16.66666667	DOWN	3	1	3	1
855244	33.33333333	DOWN	3	2	2	4
855395	66.66666667	DOWN	2	4	2	4
855448	16.66666667	UP	3	1	2	2
855476	33.33333333	UP	2	2	2	2
855487	16.66666667	DOWN	3	1	2	3
855547	16.66666667	DOWN	3	1	3	1
855574	16.66666667	UP	3	1	3	1
855698	33.33333333	UP	2	2	2	2
855728	16.66666667	DOWN	3	1	3	1
855745	16.66666667	UP	10	1	5	2
856289	16.66666667	UP	3	1	3	1
856354	33.33333333	DOWN	2	2	2	2
856535	33.33333333	DOWN	2	2	2	2
856568	33.33333333	DOWN	2	2	2	2
856639	16.66666667	DOWN	3	1	3	1
856650	16.66666667	DOWN	3	1	3	1
856878	16.66666667	UP	3	1	2	3
857249	33.33333333	UP	3	2	2	4
857612	16.66666667	UP	3	1	3	1
857640	33.33333333	UP	2	2	2	2
857874	16.66666667	UP	3	1	3	1
858132	33.33333333	UP	2	2	2	2
858363	33.33333333	UP	2	2	2	2
858450	16.66666667	DOWN	3	1	2	4
859228	16.66666667	DOWN	3	1	3	1
859253	33.33333333	UP	2	2	2	2
859266	16.66666667	DOWN	3	1	3	1
859386	16.66666667	DOWN	3	1	3	1
859392	16.66666667	DOWN	3	1	3	1
859408	16.66666667	DOWN	3	1	3	1
859460	16.66666667	UP	3	1	3	1
859832	16.66666667	DOWN	3	1	3	1
867606	16.66666667	UP	3	1	2	2
867717	16.66666667	DOWN	5	1	5	1
868188	16.66666667	DOWN	3	1	2	3
868245	16.66666667	DOWN	3	1	3	1
868396	16.66666667	DOWN	3	1	3	1
868530	16.66666667	UP	3	1	3	1
868815	16.66666667	UP	3	1	3	1
868871	16.66666667	DOWN	5	1	5	1
877835	33.33333333	DOWN	2	2	2	2
878182	16.66666667	DOWN	3	1	3	1
878231	33.33333333	DOWN	2	2	2	2

Table 10

878413	33.33333333	DOWN	2	2	2	2
878496	33.33333333	DOWN	2	2	2	2
878511	50	UP	2	3	2	3
878564	50	DOWN	3	3	2	5
878596	16.66666667	DOWN	5	1	2	6
878605	33.33333333	UP	2	2	2	2
878640	16.66666667	UP	3	1	3	1
878652	33.33333333	UP	2	2	2	2
878676	16.66666667	DOWN	3	1	3	1
882506	33.33333333	UP	2	2	2	2
882510	33.33333333	UP	2	2	2	2
882522	16.66666667	UP	3	1	3	1
884436	16.66666667	UP	3	1	2	2
884510	16.66666667	DOWN	3	1	3	1
884644	16.66666667	UP	3	1	3	1
884655	16.66666667	UP	3	1	3	1
884662	16.66666667	UP	3	1	2	2
884696	16.66666667	UP	3	1	3	1
884718	16.66666667	UP	3	1	3	1
884766	50	DOWN	2	3	2	3
897313	16.66666667	DOWN	3	1	3	1
897497	33.33333333	UP	2	2	2	2
897531	50	UP	2	3	2	3
897559	16.66666667	DOWN	3	1	2	3
897561	16.66666667	DOWN	3	1	3	1
897587	16.66666667	DOWN	3	1	2	3
897603	33.33333333	DOWN	3	2	2	3
897770	16.66666667	DOWN	5	1	2	2
897806	33.33333333	DOWN	2	2	2	2
897906	16.66666667	UP	3	1	3	1
897910	16.66666667	UP	3	1	3	1
897924	16.66666667	DOWN	3	1	2	4
897956	16.66666667	UP	3	1	3	1
898038	16.66666667	DOWN	5	1	5	1
898083	16.66666667	UP	3	1	3	1
898092	16.66666667	UP	3	1	3	1
898161	16.66666667	UP	3	1	3	1
898198	16.66666667	DOWN	3	1	2	3
898227	16.66666667	DOWN	5	1	2	3
898286	16.66666667	UP	3	1	3	1
898288	50	DOWN	2	3	2	3
898338	16.66666667	UP	3	1	3	1
949988	33.33333333	UP	2	2	2	2
950410	66.66666667	DOWN	5	4	5	4
950429	16.66666667	UP	5	1	5	1
950450	33.33333333	DOWN	3	2	2	4
950463	16.66666667	DOWN	5	1	5	1
950667	16.66666667	DOWN	3	1	3	1
950709	33.33333333	DOWN	2	2	2	2

Table 10

950778	16.66666667	DOWN	3	1	3	1
951010	16.66666667	DOWN	3	1	2	4
951016	16.66666667	DOWN	3	1	3	1
951080	16.66666667	DOWN	3	1	3	1
951125	16.66666667	DOWN	3	1	2	4
969560	33.33333333	UP	2	2	2	2
969765	33.33333333	UP	2	2	2	2
969843	33.33333333	UP	2	2	2	2
970590	33.33333333	UP	2	2	2	2
970795	33.33333333	UP	2	2	2	2
970879	16.66666667	DOWN	3	1	3	1
970880	33.33333333	DOWN	2	2	2	2
971279	16.66666667	UP	3	1	3	1
971372	16.66666667	DOWN	3	1	3	1
1031185	33.33333333	DOWN	2	2	2	2
1031446	16.66666667	UP	5	1	5	1
1031548	33.33333333	UP	2	2	2	2
1031552	16.66666667	DOWN	3	1	3	1
1031592	16.66666667	DOWN	3	1	3	1
1031593	16.66666667	DOWN	3	1	3	1
1031595	16.66666667	UP	3	1	2	3
1031598	33.33333333	UP	2	2	2	2
1031698	33.33333333	DOWN	2	2	2	2
1031701	16.66666667	DOWN	10	1	2	6
1031791	16.66666667	DOWN	5	1	3	4
1031885	33.33333333	DOWN	2	2	2	2
1031940	16.66666667	UP	3	1	3	1
1031967	16.66666667	DOWN	3	1	2	3
1031994	16.66666667	UP	5	1	5	1
1032056	33.33333333	DOWN	2	2	2	2
1032796	16.66666667	UP	3	1	3	1
1032831	16.66666667	DOWN	3	1	3	1
1033969	16.66666667	UP	3	1	3	1
1034644	16.66666667	UP	3	1	2	2
1035182	16.66666667	DOWN	3	1	2	3
1035765	33.33333333	DOWN	2	2	2	2
1048592	16.66666667	UP	5	1	2	2
1048662	16.66666667	UP	3	1	3	1
1048746	16.66666667	DOWN	3	1	2	3
1048789	50	DOWN	2	3	2	3
1048804	50	DOWN	3	3	3	3
1048889	16.66666667	UP	3	1	3	1
1048913	16.66666667	UP	3	1	3	1
1049009	16.66666667	UP	5	1	2	2
1049031	33.33333333	DOWN	2	2	2	2
1049033	50	DOWN	3	3	2	4
1049143	16.66666667	UP	10	1	10	1
1049168	33.33333333	DOWN	3	2	2	3
1055121	16.66666667	UP	3	1	3	1

Table 10

1055278	16.66666667	DOWN	3	1	2	2
1055376	16.66666667	UP	3	1	3	1
1055543	16.66666667	UP	3	1	2	2
1056172	16.66666667	DOWN	5	1	3	5
1056200	16.66666667	UP	3	1	3	1
1070324	16.66666667	UP	3	1	3	1
1090708	33.33333333	UP	2	2	2	2
1161564	50	DOWN	2	3	2	3
1240414	33.33333333	DOWN	2	2	2	2
1240535	16.66666667	UP	3	1	3	1
1276343	33.33333333	DOWN	2	2	2	2
1276665	33.33333333	UP	3	2	2	3
1292115	33.33333333	UP	2	2	2	2
1292501	33.33333333	UP	5	2	2	4
1292523	16.66666667	DOWN	3	1	3	1
1292878	33.33333333	UP	2	2	2	2
1293191	33.33333333	UP	3	2	2	3
1309620	16.66666667	DOWN	5	1	3	2
1321598	16.66666667	UP	3	1	3	1
1323591	16.66666667	DOWN	25	1	3	4
1325605	33.33333333	DOWN	2	2	2	2
1384851	16.66666667	DOWN	3	1	2	2
1388373	33.33333333	UP	2	2	2	2
1404774	66.66666667	DOWN	5	4	3	5
1409509	16.66666667	UP	5	1	5	1
1410444	83.33333333	DOWN	10	5	3	6
1412344	50	DOWN	5	3	2	6
1412481	16.66666667	UP	5	1	5	1
1412503	66.66666667	UP	2	4	2	4
1416782	16.66666667	UP	3	1	3	1
1418621	33.33333333	UP	3	2	3	2
1420527	66.66666667	DOWN	2	4	2	4
1420830	33.33333333	DOWN	2	2	2	2
1421061	16.66666667	UP	5	1	5	1
1422723	16.66666667	DOWN	3	1	3	1
1435029	16.66666667	DOWN	3	1	2	2
1435624	66.66666667	UP	2	4	2	4
1455835	16.66666667	UP	10	1	10	1
1455976	33.33333333	DOWN	2	2	2	2
1456024	16.66666667	DOWN	3	1	3	1
1456060	16.66666667	UP	3	1	2	2
1456160	16.66666667	DOWN	5	1	3	2
1456405	16.66666667	UP	50	1	50	1
1456776	33.33333333	UP	2	2	2	2
1459376	16.66666667	UP	10	1	3	2
1460386	16.66666667	UP	3	1	3	1
1461048	33.33333333	UP	2	2	2	2
1461484	16.66666667	UP	3	1	3	1
1461601	33.33333333	DOWN	2	2	2	2

Table 10

1466834	16.66666667	UP	3	1	2	3
1466904	50	DOWN	2	3	2	3
1467799	16.66666667	DOWN	5	1	2	6
1467831	16.66666667	DOWN	3	1	3	1
1468260	16.66666667	UP	10	1	10	1
1468267	16.66666667	UP	3	1	3	1
1468895	50	DOWN	2	3	2	3
1469292	16.66666667	UP	3	1	3	1
1470048	16.66666667	DOWN	5	1	2	5
1470446	66.66666667	DOWN	2	4	2	4
1470657	16.66666667	DOWN	5	1	2	4
1471841	16.66666667	DOWN	3	1	2	2
1472152	16.66666667	UP	5	1	5	1
1472689	16.66666667	UP	3	1	2	2
1472735	16.66666667	DOWN	3	1	2	3
1472743	50	DOWN	2	3	2	3
1472775	16.66666667	UP	5	1	2	2
1472928	16.66666667	UP	5	1	5	1
1473257	16.66666667	DOWN	5	1	2	3
1473300	16.66666667	DOWN	3	1	2	2
1473304	16.66666667	DOWN	3	1	3	1
1474174	50	UP	2	3	2	3
1474424	16.66666667	UP	3	1	3	1
1474429	50	DOWN	2	3	2	3
1474500	50	DOWN	2	3	2	3
1474684	33.33333333	DOWN	3	2	3	2
1474900	16.66666667	UP	5	1	5	1
1474987	16.66666667	DOWN	5	1	2	2
1475195	16.66666667	UP	5	1	2	3
1475421	16.66666667	UP	3	1	3	1
1475659	50	DOWN	2	3	2	3
1475720	50	DOWN	2	3	2	3
1476181	33.33333333	DOWN	2	2	2	2
1486194	16.66666667	UP	3	1	3	1
1486752	66.66666667	DOWN	2	4	2	4
1492202	50	DOWN	2	3	2	3
1492468	33.33333333	DOWN	5	2	3	5
1493128	33.33333333	DOWN	5	2	2	5
1493160	16.66666667	UP	5	1	5	1
1499830	33.33333333	UP	2	2	2	2
1500162	16.66666667	DOWN	3	1	2	4
1502206	16.66666667	UP	3	1	3	1
1505294	16.66666667	DOWN	3	1	2	4
1507713	50	DOWN	3	3	3	3
1517595	33.33333333	UP	2	2	2	2
1525691	16.66666667	DOWN	10	1	2	5
1536240	16.66666667	UP	5	1	3	3
1536991	16.66666667	DOWN	3	1	2	2
1551208	16.66666667	UP	3	1	2	2

Table 10

1552481	16.66666667	UP	3	1	3	1
1556526	16.66666667	UP	5	1	3	2
1558108	16.66666667	DOWN	3	1	2	3
1558492	66.66666667	DOWN	2	4	2	4
1558642	16.66666667	DOWN	3	1	2	5
1558655	16.66666667	UP	3	1	3	1
1569876	33.33333333	DOWN	2	2	2	2
1573108	50	DOWN	2	3	2	3
1573778	50	DOWN	3	3	3	3
1574594	16.66666667	DOWN	3	1	3	1
1574854	16.66666667	DOWN	3	1	3	1
1575008	16.66666667	UP	3	1	3	1
1580874	50	DOWN	2	3	2	3
1586251	16.66666667	UP	3	1	2	2
1592048	16.66666667	DOWN	3	1	3	1
1597388	16.66666667	UP	5	1	5	1
1601852	33.33333333	DOWN	3	2	2	3
1602209	16.66666667	UP	3	1	2	2
1603583	33.33333333	DOWN	2	2	2	2
1604703	33.33333333	DOWN	2	2	2	2
1605178	16.66666667	DOWN	5	1	2	2
1605426	16.66666667	UP	3	1	3	1
1606557	33.33333333	DOWN	3	2	2	3
1607229	33.33333333	DOWN	2	2	2	2
1610448	33.33333333	DOWN	2	2	2	2
1623328	33.33333333	UP	2	2	2	2
1629420	50	UP	2	3	2	3
1631863	16.66666667	UP	3	1	2	3
1636108	16.66666667	UP	5	1	5	1
1636122	33.33333333	UP	2	2	2	2
1636248	16.66666667	DOWN	3	1	3	1
1636495	16.66666667	UP	3	1	3	1
1636606	16.66666667	UP	5	1	5	1
1636786	33.33333333	DOWN	2	2	2	2
1636812	16.66666667	DOWN	5	1	2	4
1638479	16.66666667	DOWN	3	1	3	1
1642145	16.66666667	UP	3	1	2	3